



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: TSZ25EC075A02-01
Date of issue: 2025-06-10
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Name of Testing Laboratory preparing the Report.....: Shenzhen Tiansu Calibration and Testing Co., Ltd.

Applicant's name.....: .
Address

Test specification:

Standard: IEC 62133-2:2017, IEC 62133-2:2017/AMD1:2021
Test procedure: CB Scheme
Non-standard test method.....: N/A

TRF template used: IECEE OD-2020-F1:2021, Ed.1.4
Test Report Form No.....: IEC62133_2C
Test Report Form(s) Originator.....: DEKRA Certification B.V.
Master TRF: Dated 2022-07-01

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Test item description	Rechargeable Li-ion Battery	
Trade Mark(s).....	N/A	
Manufacturer.....	Same as applicant	
Model/Type reference	GP-18650-1S2P	
Ratings	3.7V, 3600mAh, 13.32Wh	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/> CB Testing Laboratory:	Shenzhen Tiansu Calibration and Testing Co., Ltd.	
Testing location/ address	Building 4, No.2, Jinlong Road, Longgang District, Shenzhen, Guangdong, China.	
Tested by (name, function, signature)	Aine Liao /Project Handler	<i>Aine Liao</i>
Approved by (name, function, signature) ..	Sean Xie /Reviewer	<i>Sean Xie</i>
<input type="checkbox"/> Testing procedure: CTF Stage 1:		
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature) ..		
<input type="checkbox"/> Testing procedure: CTF Stage 2:		
Testing location/ address		
Tested by (name + signature)		
Witnessed by (name, function, signature) ..		
Approved by (name, function, signature) ..		
<input type="checkbox"/> Testing procedure: CTF Stage 3:		
<input type="checkbox"/> 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) :		

<p>List of Attachments (including a total number of pages in each attachment):</p> <p>National Differences (3 pages)</p> <p>Enclosures (12 pages)</p>	
<p>Summary of testing:</p>	
<p>Tests performed (name of test and test clause):</p> <p>Testing for Battery: GP-18650-1S2P</p> <p>7.2.2 Case stress at high ambient temperature (battery)</p> <p>7.3.2 External short-circuit (battery)</p> <p>7.3.3 Free fall</p> <p>7.3.6 Over-charging of battery</p> <p>7.3.8 Mechanical tests (batteries)</p> <p>7.3.8.1 Vibration</p> <p>7.3.8.2 Mechanical shock</p>	<p>Testing location:</p> <p>Shenzhen Tiansu Calibration and Testing Co., Ltd. Building 4, No.2, Jinlong Road, Longgang District, Shenzhen, Guangdong, China.</p>
<p>Summary of compliance with National Differences (List of countries addressed):</p> <p>KR, EU group *, United Kingdom (Per customer's request shown separately)</p> <p>*=No National or Group Differences declared, KR=Republic of Korea</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of KC 62133-2(2020-07)</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of EN 62133-2: 2017/A1:2021</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of BS EN 62133-2: 2017/A1:2021</p>	
<p>Use of uncertainty of measurement for decisions on conformity (decision rule) :</p> <p><input checked="" type="checkbox"/> No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").</p> <p><input type="checkbox"/> Other:... (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)</p> <p>Information on uncertainty of measurement:</p> <p>The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.</p> <p>IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.</p> <p>Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.</p>	

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.

Remark:

1. The date code "YYYY-MM-DD" represents the date of manufacture. "YYYY" represents the year, "MM" represents the month and "DD" represents the day. For example, "2025-04-16" represents manufacturing on April 16, 2025.

Test item particulars : --	
Classification of installation and use : --	
Supply Connection : DC connector	
Recommend charging method declared by the manufacturer : CC/CV	
Discharge current (0,2 It A) : 720mA	
Specified final voltage : 3.0V	
Upper limit charging voltage per cell : 4.23V	
Maximum charging current : 1200mA	
Charging temperature upper limit : 45°C	
Charging temperature lower limit : 0°C	
Polymer cell electrolyte type : <input type="checkbox"/> gel polymer <input type="checkbox"/> solid polymer <input checked="" type="checkbox"/> 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 : 2025-05-13	
Date (s) of performance of tests : 2025-05-19 to 2025-06-03	
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 <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC62133-2:	
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..... :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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:

- Electronic components and two Rechargeable Li-ion cells(1S2P) are mounted on PWB and connected to the DC connector through wire for Rechargeable Li-ion Battery (Model: GP-18650-1S2P).

-Internal cell (Model ICR18650 1800) has been evaluated with IEC 62133-2:2017, IEC 62133-2:2017/AMD1:2021, CB certificate No.: 1) NL-51042 issued on 2018-03-15, 2) NL-78316 issued on 2021-12-28, 3) NL-117258 issued on 2025-06-09, all issued by DEKRA Certification B.V. CB test report No.: 1) 4343832.50 issued on 2018-03-14, 2) 4384247.50 issued on 2021-12-27, 3) 4939097.50 issued on 2025-06-09, all issued by DEKRA Testing and Certification (Shanghai) Ltd.,Guangzhou Branch.

- Battery Pack (Model: GP-18650-1S2P) has been evaluated to comply with UN "Manual of Tests and Criteria" ST/SG/AC.10/11/Rev.8/Subsection 38.3, test report No.: TSZ25EC075A04-01 issued on 2025-05-27, issued by Shenzhen Tiansu Calibration and Testing Co., Ltd.

- Type reference 1ICR19/66-2 is IEC 61960-3:2017 designation which is identical model GP-18650-1S2P except for model designation.

- Detailed information of the battery, as following:

Product Name: Rechargeable Li-ion Battery	
Type	Battery
Model	GP-18650-1S2P
Rated Capacity	3600mAh
Nominal Voltage	3.7V
Recommend Charging Voltage	4.2V
Upper Limit Charging Voltage	4.23V
Recommend Charging Current	720mA
Maximum Charging Current	1200mA
Recommend Discharging Current	720mA
Maximum Discharging Current	2000mA
End-of-discharge Voltage	3.0V
End-of-charge Current	36mA
Operation Charge Temperature	0~45°C
Operation Discharge Temperature	-20~60°C

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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 (excluding electrical contact surfaces) exists on the battery surfaces.	N/A
	Insulation resistance (MΩ)..... :		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		P
	Orientation of wiring maintains adequate clearances and creepage distances between conductors		P
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		P
5.3	Venting		P
	Battery cases and cells incorporate a pressure relief mechanism or are constructed so that they relieve excessive internal pressure at a value and rate that will preclude rupture, explosion and self-ignition	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		P
	Batteries are designed such that abnormal temperature rise conditions are prevented		P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	Cell specification and battery specification have been provided. The design of the battery refers to the parameters of the cell.	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	Battery specifications have been provided.	P
5.5	Terminal contacts		P

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Clause	Requirement + Test	Result - Remark	Verdict
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current		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 circuits		P
5.6	Assembly of cells into batteries		P
5.6.1	General		P
	Each battery has an independent control and protection for current, voltage, temperature and any other parameter required for safety and to maintain the cells within their operating region	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 has protective circuitry that can maintain the cells within their operating regions		N/A
	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly	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 are 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		N/A
5.6.2	Design recommendation		P
	For the battery consisting of a single cell or a single cellblock, it is recommended that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 2	1S2P, Max. charging voltage of component cell: 4.23V, not exceed 4.23V specified in Table 2.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that the voltages of any one of the single cells or single cellblocks does not exceed the upper limit of the charging voltage, specified in Table 2, by monitoring the voltage of every single cell or the single cellblocks		N/A
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that charging is stopped when the upper limit of the charging voltage is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks		N/A
	For batteries consisting of series-connected cells or cell blocks, nominal charge voltage are not counted as an overcharge protection		N/A
	For batteries consisting of series-connected cells or cell blocks, cells have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer		N/A
	It is recommended that the cells and cell blocks are not discharged beyond the cell manufacturer's specified final voltage		P
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry are incorporated into the battery management system		N/A
5.6.3	Mechanical protection for cells and components of batteries		P
	Mechanical protection for cells, cell connections and control circuits within the battery are provided to prevent damage as a result of intended use and reasonably foreseeable misuse		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		N/A
	The battery case and compartments housing cells are designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer		N/A
	For batteries intended for building into a portable end product, testing with the battery installed within the end product is considered when conducting mechanical tests		N/A
5.7	Quality plan		P

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Clause	Requirement + Test	Result - Remark	Verdict
	The manufacturer prepares and implements a quality plan that defines procedures for the inspection of materials, components, cells and batteries and which covers the whole process of producing each type of cell or battery	Complied. ISO 9001:2015 certificate provided.	P
5.8	Battery safety components		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
	The internal resistance of coin cells are measured in accordance with Annex D. Coin cells with internal resistance less than or equal to 3 Ω are tested in accordance with Table 1	Not coin cells.	N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of 20 °C \pm 5 °C		P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and over discharge protection		N/A
	When conducting the short-circuit test, consideration is given to the simulation of any single fault condition that is likely to occur in the protecting circuit that would affect the short-circuit test		P
7	SPECIFIC REQUIREMENTS AND TESTS		P
7.1	Charging procedure for test purposes		P
7.1.1	First procedure		P
	This charging procedure applies to subclauses other than those specified in 7.1.2		P
	Unless otherwise stated in this document, the charging procedure for test purposes is carried out in an ambient temperature of 20 °C \pm 5 °C, using the method declared by the manufacturer		P
	Prior to charging, the battery has been discharged at 20 °C \pm 5 °C at a constant current of 0,2 It A down to a specified final voltage		P
7.1.2	Second procedure	CB approval cell used.	N/A
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	After stabilization for 1 h to 4 h, at an ambient temperature of the highest test temperature and the lowest test temperature, respectively, as specified in Table 2, cells are charged by using the upper limit charging voltage and maximum charging current, until the charging current is reduced to 0,05 It A, using a constant current to constant voltage charging method		N/A
7.2	Intended use		P
7.2.1	Continuous charging at constant voltage (cells)	CB approved cell used.	N/A
	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		N/A
	Results: no fire, no explosion, no leakage		N/A
7.2.2	Case stress at high ambient temperature (battery)	Test for reference.	P
	Oven temperature (°C)	70	—
	Results: no physical distortion of the battery case resulting in exposure of internal protective components and cells		P
7.3	Reasonably foreseeable misuse		P
7.3.1	External short-circuit (cell)	CB approved cell used.	N/A
	The cells 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
	Results: no fire, no explosion		N/A
7.3.2	External short-circuit (battery)		P
	The batteries 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
	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
	A single fault in the discharge protection circuit is conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test	Single fault conducted on four samples.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	A single fault applies to protective component parts such as MOSFET (metal oxide semiconductor field-effect transistor), fuse, thermostat or positive temperature coefficient (PTC) thermistor	(See appended table 7.3.2)	P
	Results: no fire, no explosion	(See appended table 7.3.2)	P
7.3.3	Free fall		P
	Results: no fire, no explosion		P
7.3.4	Thermal abuse (cells)	CB approved cell used.	N/A
	Oven temperature (°C)		—
	Results: no fire, no explosion		N/A
7.3.5	Crush (cells)	CB approved cell used.	N/A
	The crushing force was released upon:		N/A
	- The maximum force of 13 kN ± 0,78 kN has been applied; or		N/A
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N/A
	Results: no fire, no explosion		N/A
7.3.6	Over-charging of battery		P
	The supply voltage which is:		P
	- 1,4 times the upper limit charging voltage presented in Table A.1 (but not to exceed 6,0 V) for single cell/cell block batteries or	5.922V applied.	P
	- 1,2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and		N/A
	- Sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached		P
	Test was continued until the temperature of the outer casing:		P
	- Reached steady state conditions (less than 10 °C change in 30-minute period); or		P
	- Returned to ambient		N/A
	Results: no fire, no explosion	(See appended table 7.3.6)	P
7.3.7	Forced discharge (cells)	CB approved cell used.	N/A
	Discharge a single cell to the lower limit discharge voltage specified by the cell manufacturer		N/A
	The discharged cell is then subjected to a forced discharge at 1 It A to the negative value of the upper limit charging voltage		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- The discharge voltage reaches the negative value of upper limit charging voltage within the testing duration. The voltage is maintained at the negative value of the upper limit charging voltage by reducing the current for the remainder of the testing duration		N/A
	- The discharge voltage does not reach the negative value of upper limit charging voltage within the testing duration. The test is terminated at the end of the testing duration		N/A
	Results: no fire, no explosion		N/A
7.3.8	Mechanical tests (batteries)		P
7.3.8.1	Vibration		P
	Results: no fire, no explosion, no rupture, no leakage or venting.....	(See appended table 7.3.8.1)	P
7.3.8.2	Mechanical shock		P
	Results: no leakage, no venting, no rupture, no explosion and no fire.....	(See appended table 7.3.8.2)	P
7.3.9	Design evaluation – Forced internal short-circuit (cells)	CB approved cell used.	N/A
	The cells complied with national requirement for		—
	The pressing was stopped upon:		N/A
	- A voltage drop of 50 mV has been detected; or		N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached		N/A
	Results: no fire		N/A
8	INFORMATION FOR SAFETY		P
8.1	General		P
	Manufacturers of secondary cells provides information about current, voltage and temperature limits of their products	CB approval cell used.	N/A
	Manufacturers of batteries provides information regarding how to minimize and mitigate hazards to equipment manufacturers or end-users	Information for safety mentioned in manufacturer's specifications.	P
	Systems analyses are performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		N/A
	As appropriate, any information relating to hazard avoidance resulting from a system analysis is provided to the end user		N/A
	Do not allow children to replace batteries without adult supervision		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.2	Small cell and battery safety information	Not small 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		N/A
	Cells are marked as specified in IEC 61960, except coin cells		N/A
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity	Not coin cells.	N/A
	By agreement between the cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked		N/A
9.2	Battery marking		P
	Batteries are marked as specified in IEC 61960, except for coin batteries	IEC 61960-3:2017 Designation: 1ICR19/66-2	P
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity	Not coin batteries.	N/A
	Batteries are marked with an appropriate caution statement		P
	- Terminals have clear polarity marking on the external surface of the battery, or		P
	- Not be marked with polarity markings if the design of the external connector prevents reverse polarity connections	The design of the external connector prevents reverse polarity connections also used.	P
9.3	Caution for ingestion of small cells and batteries	Not small batteries.	N/A
	Coin cells and batteries identified as small batteries include a caution statement regarding the hazards of ingestion in accordance with 8.2	Not coin cells and batteries.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion is given on the immediate package		N/A
9.4	Other information		P
	The following information are marked on or supplied with the battery:		P
	- Storage and disposal instructions	Information for storage and disposal instructions in manufacturer's specifications.	P
	- Recommended charging instructions	Information for recommended charging instructions in manufacturer's specifications.	P
10	PACKAGING AND TRANSPORT		P
	Packaging for coin cells are not be small enough to fit within the limits of the ingestion gauge of Figure 3	Not coin cells.	N/A
ANNEX A	CHARGING AND DISCHARGING RANGE OF SECONDARY LITHIUM ION CELLS FOR SAFE USE		N/A
A.1	General	CB approved cell used.	N/A
A.2	Safety of lithium ion secondary battery		N/A
A.3	Consideration on charging voltage		N/A
A.3.1	General		N/A
A.3.2	Upper limit charging voltage		N/A
A.3.2.1	General		N/A
A.3.2.2	Explanation of safety viewpoint		N/A
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied		N/A
A.4	Consideration of temperature and charging current		N/A
A.4.1	General		N/A
A.4.2	Recommended temperature range		N/A
A.4.2.1	General		N/A
A.4.2.2	Safety consideration when a different recommended temperature range is applied		N/A
A.4.3	High temperature range		N/A
A.4.3.1	General		N/A
A.4.3.2	Explanation of safety viewpoint		N/A
A.4.3.3	Safety considerations when specifying charging conditions in the high temperature range		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range		N/A
A.4.4	Low temperature range		N/A
A.4.4.1	General		N/A
A.4.4.2	Explanation of safety viewpoint		N/A
A.4.4.3	Safety considerations, when specifying charging conditions in the low temperature range		N/A
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range		N/A
A.4.5	Scope of the application of charging current		N/A
A.4.6	Consideration of discharge		N/A
A.4.6.1	General		N/A
A.4.6.2	Final discharge voltage and explanation of safety viewpoint		N/A
A.4.6.3	Discharge current and temperature range		N/A
A.4.6.4	Scope of application of the discharging current		N/A
A.5	Sample preparation		N/A
A.5.1	General		N/A
A.5.2	Insertion procedure for nickel particle to generate internal short		N/A
A.5.3	Disassembly of charged cell		N/A
A.5.4	Shape of nickel particle		N/A
A.5.5	Insertion of nickel particle in cylindrical cell		N/A
A.5.5.1	Insertion of nickel particle in winding core		N/A
A.5.5.2	Marking the position of the nickel particle on both ends of the winding core of the separator		N/A
A.5.6	Insertion of nickel particle in prismatic cell		N/A
A.6	Experimental procedure of the forced internal short-circuit test		N/A
A.6.1	Material and tools for preparation of nickel particle		N/A
A.6.2	Example of a nickel particle preparation procedure		N/A
A.6.3	Positioning (or placement) of a nickel particle		N/A
A.6.4	Damaged separator precaution		N/A
A.6.5	Caution for rewinding separator and electrode		N/A
A.6.6	Insulation film for preventing short-circuit		N/A
A.6.7	Caution when disassembling a cell		N/A
A.6.8	Protective equipment for safety		N/A
A.6.9	Caution in the case of fire during disassembling		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
A.6.10	Caution for the disassembling process and pressing the electrode core		N/A
A.6.11	Recommended specifications for the pressing device		N/A
ANNEX B	RECOMMENDATIONS TO EQUIPMENT MANUFACTURERS AND BATTERY ASSEMBLERS		P
ANNEX C	RECOMMENDATIONS TO THE END-USERS		N/A
ANNEX D	MEASUREMENT OF THE INTERNAL AC RESISTANCE FOR COIN CELLS		N/A
D.1	General	Not coin cells.	N/A
D.2	Method		N/A
	A sample size of three coin cells is required for this measurement		N/A
	Coin cells with an internal resistance greater than 3 Ω require no further testing		N/A
	Coin cells with an internal resistance less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1		N/A
ANNEX E	PACKAGING AND TRANSPORT		P
ANNEX F	COMPONENT STANDARDS REFERENCES		N/A

IEC 62133-2					
Clause	Requirement + Test			Result - Remark	Verdict
7.2.1	TABLE: Continuous charging at constant voltage (cells)				N/A
Sample No.	Recommended charging voltage V _c (Vdc)	Recommended charging current I _{rec} (A)	OCV before test (Vdc)	Results	
Supplementary information:					

7.3.1	TABLE: External short circuit (cell)					N/A
Sample No.	Ambient (°C)	OCV at start of test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K)	Results	
Samples charged at charging temperature upper limit						
Samples charged at charging temperature lower limit						
Supplementary information:						

IEC 62133-2						
Clause	Requirement + Test				Result - Remark	Verdict
7.3.2	TABLE: External short circuit (battery)					P
Sample No.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K)	Component single fault condition	Results
B04#	23.1	4.181	81	0.7	Short circuit PTC (F1)	A, D
B05#	23.1	4.179	76	0.6	Short circuit PTC (F1)	A, D
B06#	23.1	4.183	77	10.5	Short circuit MOSFET (Q2)	A, C
B07#	23.1	4.183	79	8.5	Short circuit MOSFET (Q2)	A, C
B08#	23.1	4.185	84	0.5	Normal	A, D
Supplementary information:						
A - No fire or explosion						
B - The test ends after 24 hours						
C - The case temperature declined by 20% of the maximum temperature rise						
D - Rapid decline in short circuit current, the battery pack should remain on test for an additional one hour after the current reaches a low end steady state condition.						
Fault condition: MOSFET (Q2) Pin 2 to Pin 7 short circuit.						

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

7.3.5	TABLE: Crush (cells)				N/A
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					
Samples charged at charging temperature lower limit					
Supplementary information:					

7.3.6	TABLE: Over-charging of battery				P
Constant charging current (A)		7.2		—	
Supply voltage (Vdc)		5.922		—	
Sample No.	OCV before charging (Vdc)	Total charging time (minute)	Maximum outer case temperature (°C)	Results	
B12#	3.294	114	20.6	A, C	
B13#	3.324	114	20.6	A, C	
B14#	3.311	114	20.3	A, C	
B15#	3.320	114	20.9	A, C	
B16#	3.274	114	21.1	A, C	
Supplementary information:					
A - No fire or explosion					
B - The test was continued until the temperature of the outer casing returned to ambient.					
C - The test was continued until the temperature of the outer casing reached steady state conditions.					

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

7.3.7	TABLE: Forced discharge (cells)				N/A
Sample No.	OCV before application of reverse charge (Vdc)	Measured reverse charge I_r (A)	Lower limit discharge voltage (Vdc)	Results	

Supplementary information:

7.3.8.1	TABLE: Vibration					P
Sample No.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results	
B17#	4.185	4.182	89.095	89.078	A, B, C, D	
B18#	4.187	4.185	89.132	89.109	A, B, C, D	
B19#	4.183	4.181	89.033	89.024	A, B, C, D	

Supplementary information:
A - No fire or explosion
B - No rupture
C - No leakage
D - No venting
E - Others (please explain)

7.3.8.2	TABLE: Mechanical shock					P
Sample No.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results	
B20#	4.185	4.184	89.128	89.121	A, B, C, D	
B21#	4.181	4.180	89.129	89.123	A, B, C, D	
B22#	4.187	4.185	89.924	89.918	A, B, C, D	

Supplementary information:
A - No fire or explosion
B - No rupture
C - No leakage
D - No venting
E - Others (please explain)

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

7.3.9	TABLE: Forced internal short circuit (cells)					N/A
Sample No.	Chamber ambient T (°C)	OCV before test (Vdc)	Particle location ¹⁾	Maximum applied pressure (N)	Results	
Samples charged at charging temperature upper limit						
Samples charged at charging temperature lower limit						
Supplementary information:						
¹⁾ Identify one of the following:						
1: Nickel particle inserted between positive and negative (active material) coated area.						
2: Nickel particle inserted between positive aluminium foil and negative active material coated area.						

D.2	TABLE: Internal AC resistance for coin cells				N/A
Sample no.	Ambient T (°C)	Store time (h)	Resistance Rac (Ω)	Results ¹⁾	
Supplementary information:					
¹⁾ Coin cells with an internal resistance less than or equal to 3 Ω, see test result on corresponding tables according to Clause 6 and Table 1.					

IEC 62133-2			
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⁾
1. Cell		ICR18650 1800	3.7Vdc, 1800mAh	IEC 62133-2:2017, IEC 62133-2:2017/AMD1: 2021	CB Test Certificate No.: 1) NL-51042 2) NL-78316 3) NL-117258
2. PCB	Shenzhen Lutongda Technology Co Ltd	LTD-D	130°C, V-0	UL 94 UL 796	UL E486889
2.1 PCB (Alternative)	Interchangeable	Interchangeable	130°C, V-0	UL 94 UL 796	UL Approved
3. IC (U1)	Shenzhen SanheMicro Co., Ltd.	SH2113-KB5B-C	Overcharge detection voltage: 4.25V±0.025V, Overdischarge detection voltage: 2.8V±0.05V, Operation temperature range: -40~85°C	--	Tested with appliance
4. MOSFET (Q2)	FNK-Semiconductor	FNK2020A	V _{DS} : 20V, V _{GS} : ±12V, I _D : 6A, T _J , T _{STG} : -55°C to 150°C	--	Tested with appliance
5. PTC (F1)	DONGGUAN TLC ELECTRONIC TECHNOLOGY CO LTD	TLC-NSML450/12	V _{max} : 12V, I _h : 4.5A, I _t : 9A	UL 1434	UL E352136
6. Wire	DONGGUAN WENCHANG ELECTRONIC CO.,LTD	1007	24AWG, 80°C, 300V	UL 758	UL E214500
6.1 Wire	Interchangeable	Interchangeable	24AWG, 80°C, 300V	UL 758	UL Approved
7. Connector	ZHEJIANG LIANHE ELECTRONIC CO LTD	PH-2Y	V-0, 2Pins, Operation temperature range: -25°C to 85°C	UL 1977 UL 94	UL E364711
7.1 Connector (Alternative)	Interchangeable	Interchangeable	V-0, 2Pins, Operation temperature range: -25°C to 85°C	UL 1977 UL 94	UL Approved
Supplementary information: ¹⁾ Provided evidence ensures the agreed level of compliance. See OD-2039. ²⁾ The CBTL has verified the component information. ³⁾ License available upon request.					

ATTACHMENT to IEC62133_2C			
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-F3:2022, Ed. 1.2			
Attachment Form No.....: KR_ND_IEC62133_2C			
Attachment Originator: KTR			
Master Attachment.....: 2023-08-02			
Copyright © 2022 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.			
	National Differences		P
7.3.6	Over-charging of battery		N/A
(Revision)	<p>[Add the bolded text]</p> <p>b) Test</p> <p>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 k A, to a final discharge voltage specified by the manufacturer. Sample batteries shall then be charged at a constant current of 2,0 k A, using a supply voltage which is:</p> <ul style="list-style-type: none"> • 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 k A throughout the duration of the test or until the supply voltage is reached. <p><u>• 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 k A,</u></p> <p><u>(e.g., quick charging power bank, etc.)</u></p>		N/A

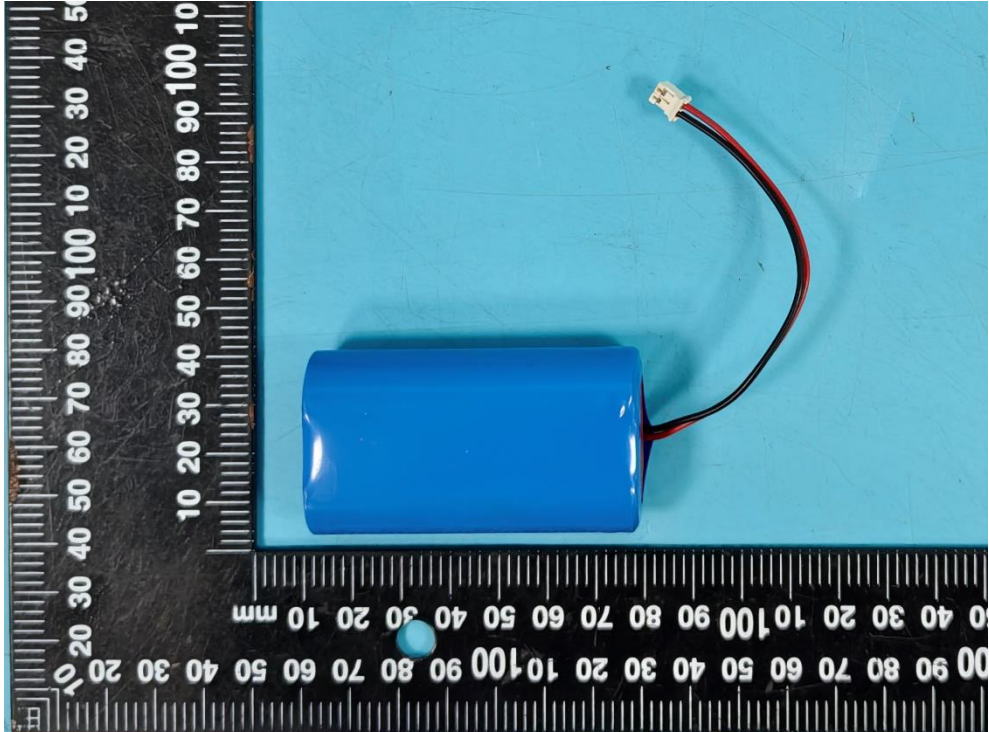
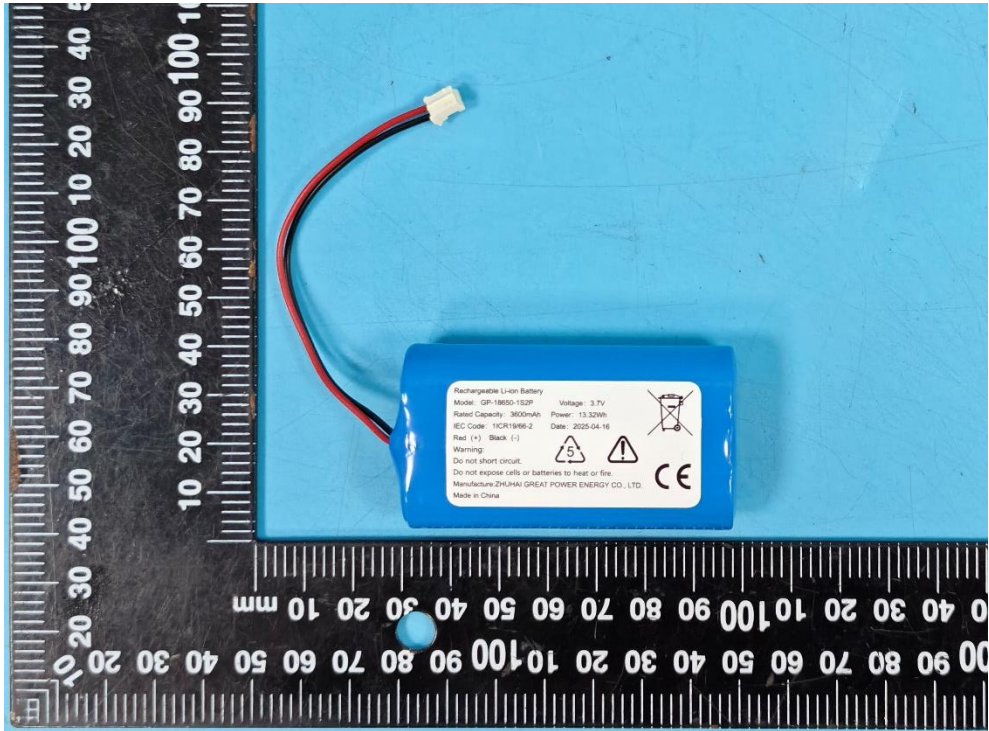
ATTACHMENT to IEC62133_2C			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>[Replace to the following statement]</p> <p>c) Acceptance criteria Filling beyond the manufacturer's specified limits should not result in ignition or explosion</p>		N/A
Annex G	Definition for shape and materials of outer case for cell		—
<i>(Addition)</i>	<p>G.1 General Annex G provides definitions for shape and materials of outer case for cell</p> <p>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.</p> <p>G 2.2 Prismatic cell Cell having the shape of a parallelepiped whose faces are rectangular</p> <p>G.3 Materials of outer case for cell G.3.1 Soft case Non-metallic outer case or container for cell</p> <p>G.3.2 Hard case Metallic outer case or container for cell.</p>	<p>(Shape of outer cases) <input checked="" type="checkbox"/> Cylindrical <input type="checkbox"/> Prismatic</p> <p>(Materials of outer cases) <input checked="" type="checkbox"/> Hard <input type="checkbox"/> Soft</p>	—
Annex H	Calculation method of the volumetric energy density for cell		—
<i>(Addition)</i>	<p>Annex H provide a calculation method of the volumetric energy density for cell in use of smart phone, tablet, notebook.</p> <p>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.</p>	378.27Wh / L	—

ATTACHMENT to IEC62133_2C			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>H.2 Calculation Method</p> <p>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)</p> $\text{Volumetric energy density (Wh/L)} = \frac{\text{Nominal voltage (V)} \times \text{Rated capacity (Ah)}}{\text{Length (L)} \times \text{Width (W)} \times \text{Thickness (T)}}$ <p>[H.1 – Prismatic cell using soft case]</p> <p>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)</p> $\text{Volumetric energy density (Wh/L)} = \frac{\text{Nominal voltage (V)} \times \text{Rated capacity (Ah)}}{\text{Length (L)} \times \text{Width (W)} \times \text{Thickness (T)}}$ <p>[H.2 – Prismatic cell using hard case]</p> <p>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)</p> $\text{Volumetric energy density (Wh/L)} = \frac{\text{Nominal voltage (V)} \times \text{Rated capacity (Ah)}}{3.14159 \times \frac{\text{Diameter (D)}^2}{4} \times \text{Length(L)}}$ <p>[H.3 – Cylindrical cell using hard case]</p>		

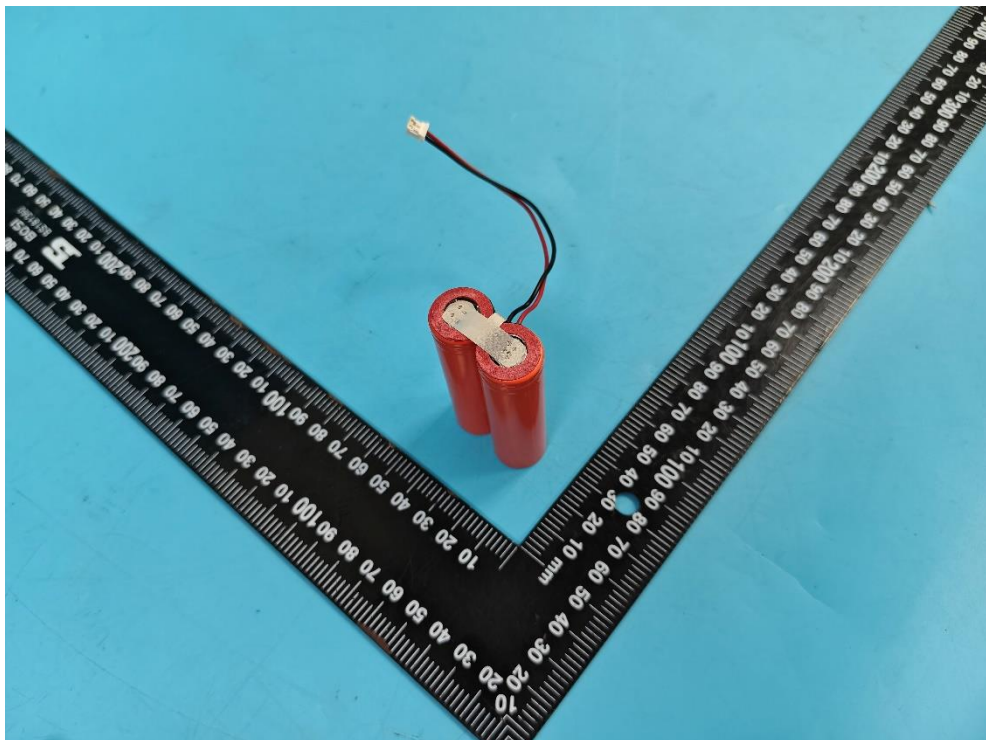
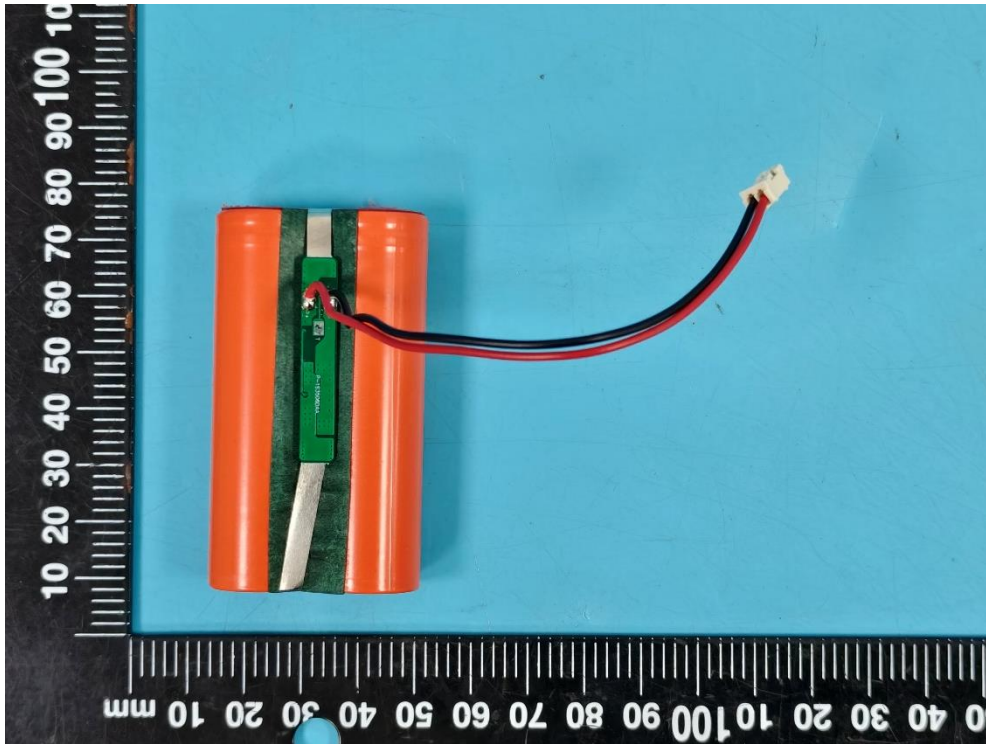
ENCLOSURES

Supplement ID	Description
01	Overall view of Rechargeable Li-ion Battery, Model GP-18650-1S2P
02	Internal view of Rechargeable Li-ion Battery, Model GP-18650-1S2P
03	PWB of Rechargeable Li-ion Battery, Model GP-18650-1S2P
04	Overall view of Rechargeable Li-ion Cell, Model ICR18650 1800
05	PWB layout of Rechargeable Li-ion Battery, Model GP-18650-1S2P
06	Schematic diagram of Rechargeable Li-ion Battery, Model GP-18650-1S2P
07	Drawing for Rechargeable Li-ion Cell, Model ICR18650 1800
08	Dimensional drawing for Rechargeable Li-ion Battery, Model GP-18650-1S2P
09-01, 09-02, 09-03	Safety information and instruction for Rechargeable Li-ion Battery, Model GP-18650-1S2P

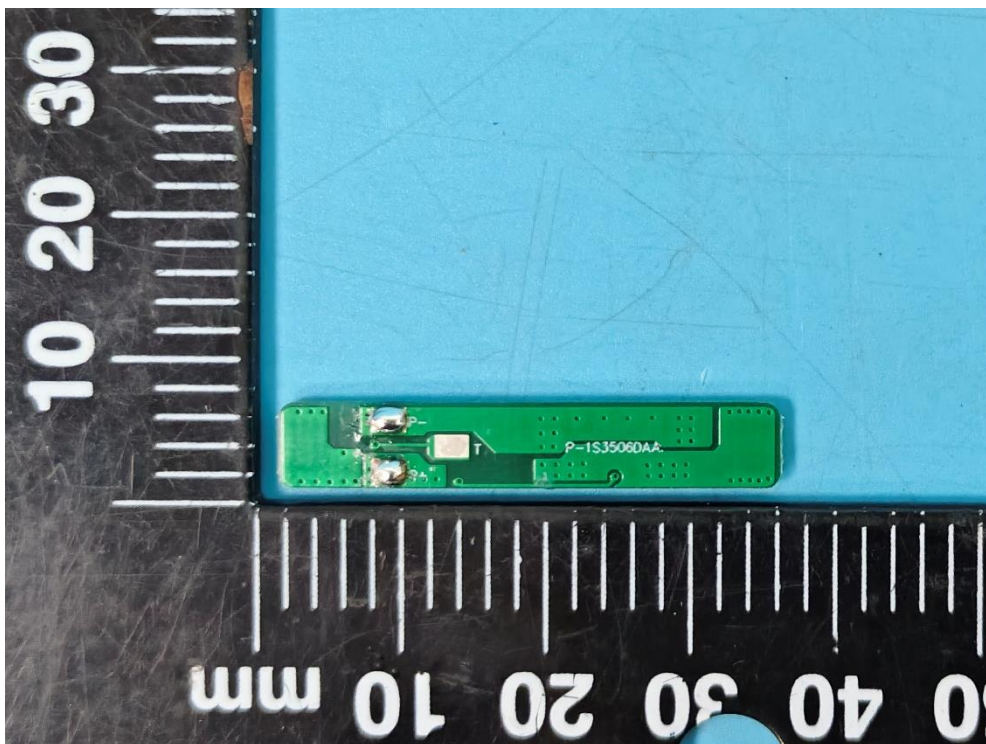
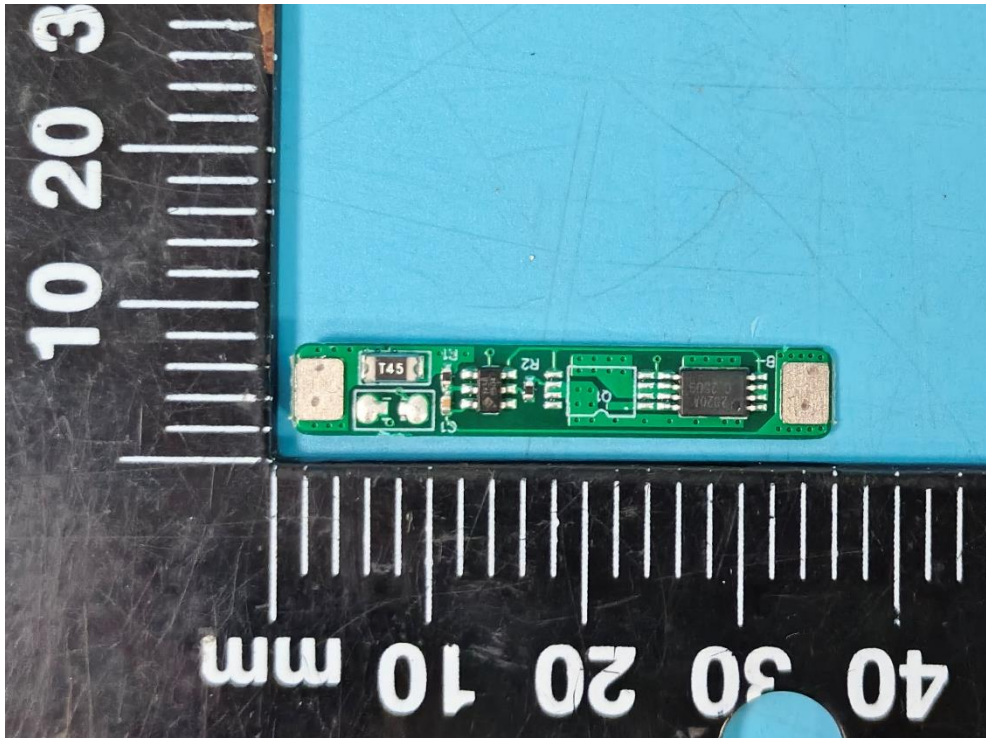
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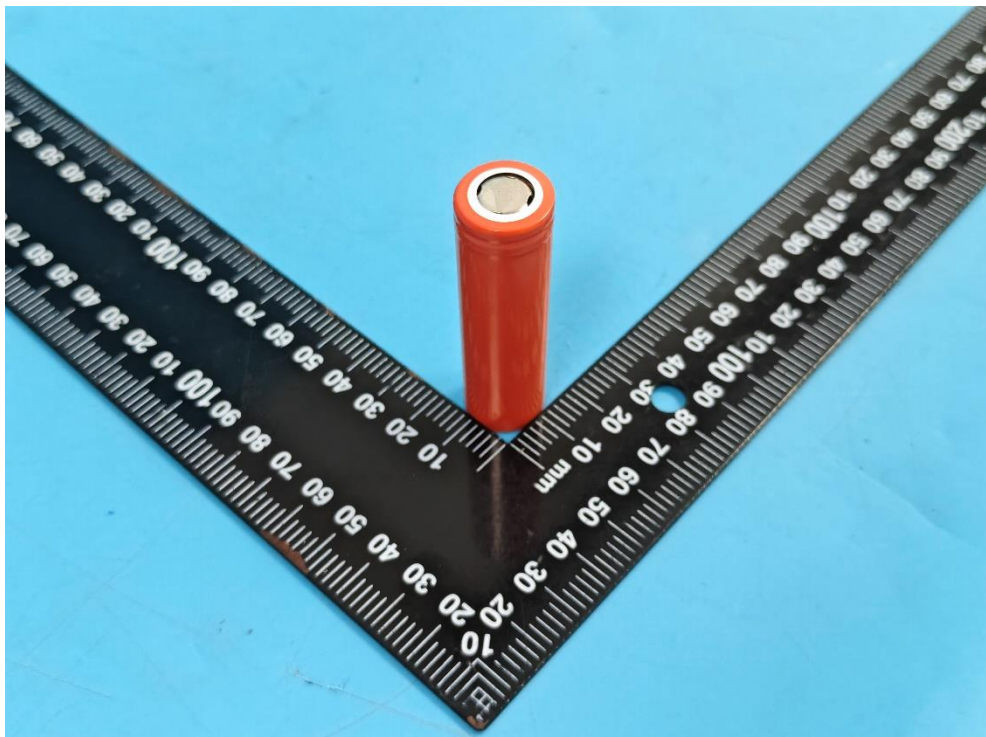
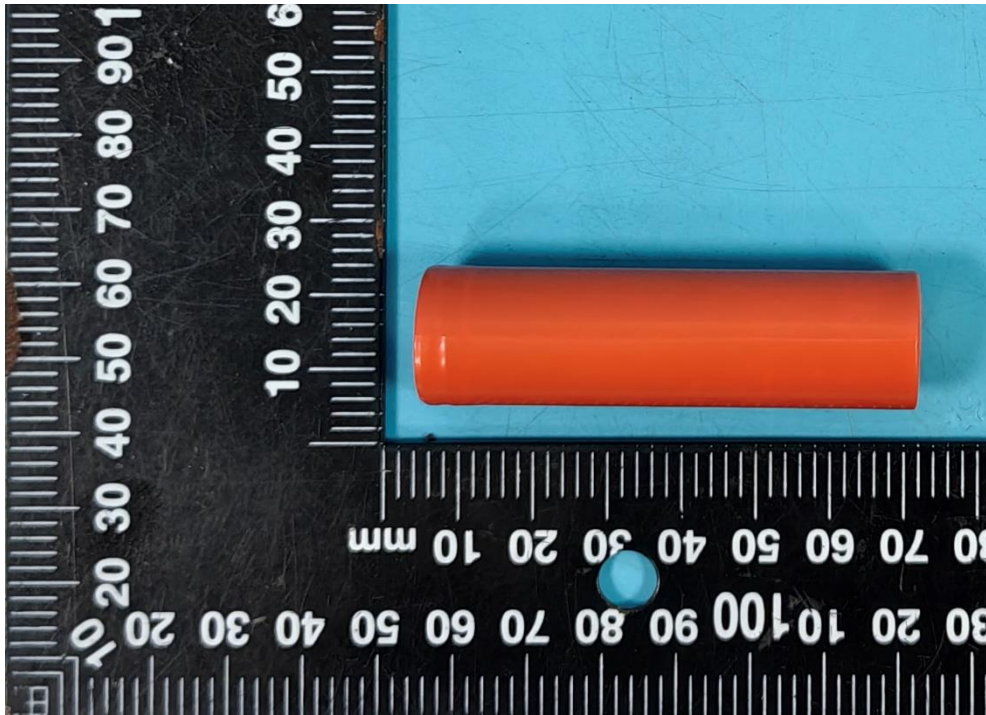
ID 02



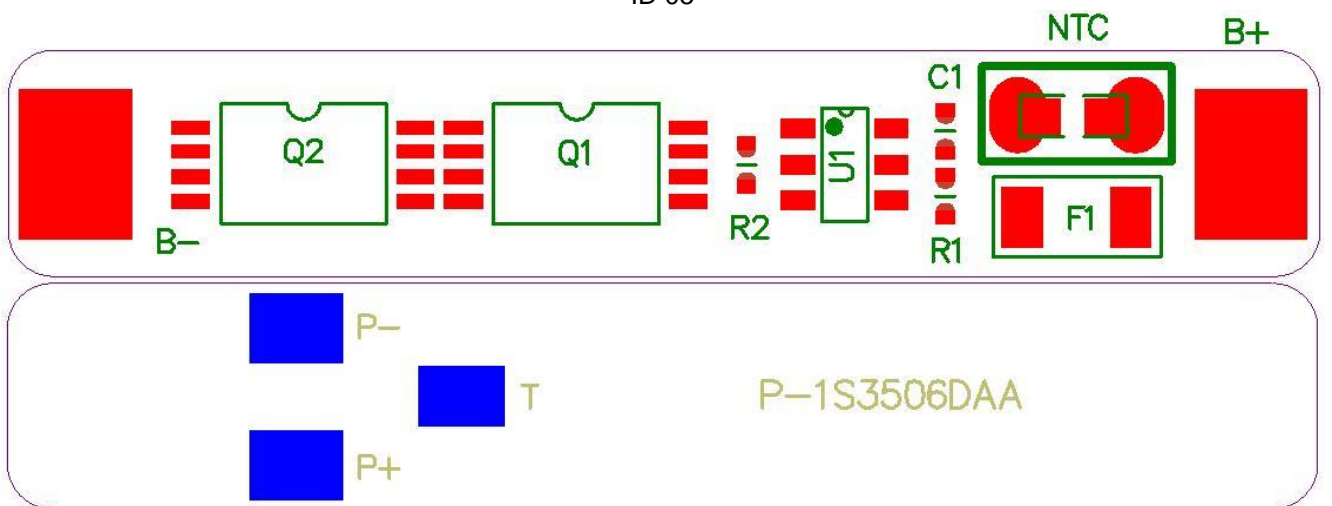
ID 03



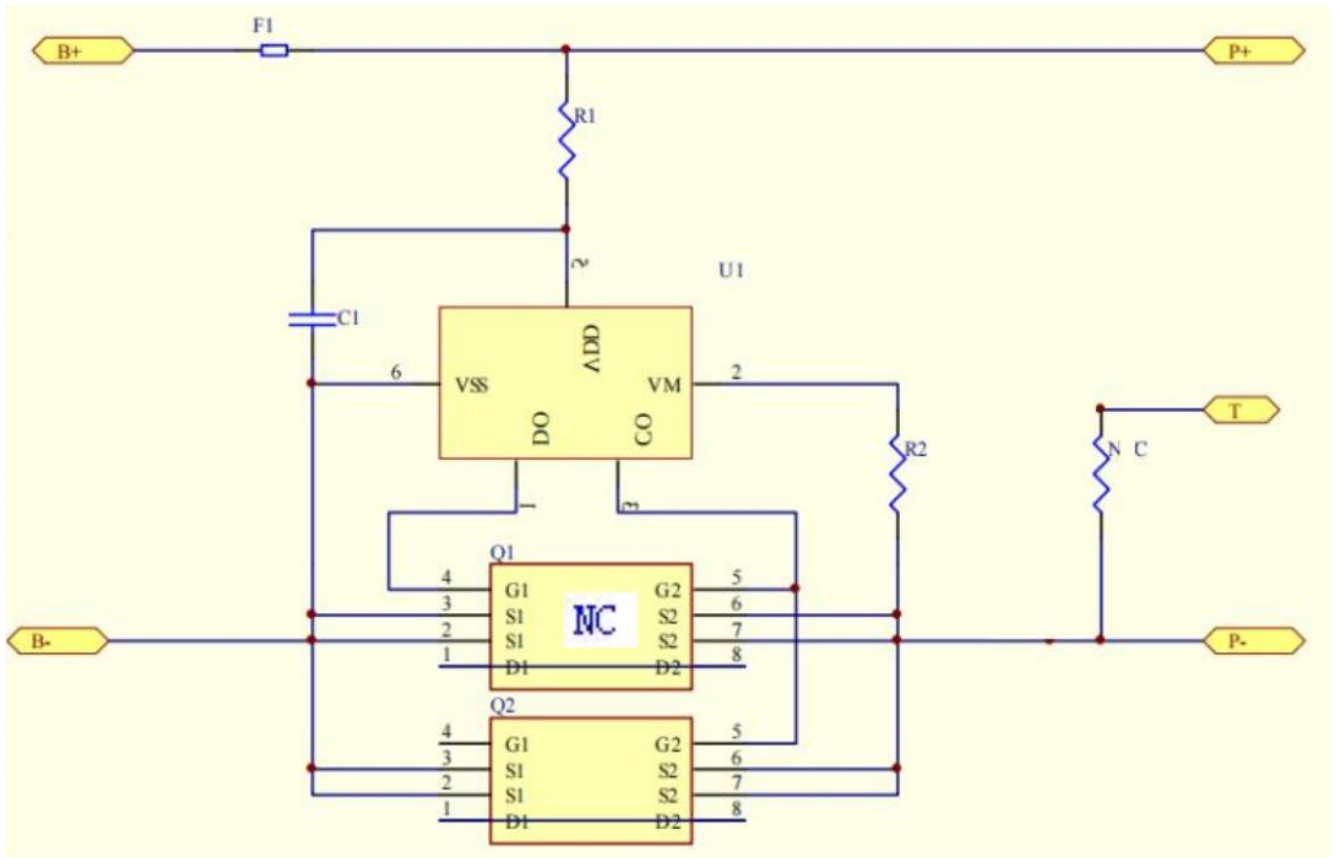
ID 04



ID 05



ID 06



ID 07



D	H
18.5 Max.	65.5 Max.

Cell (Unit: mm)

ID 09-01

11 Handling of Cells / 电池操作注意事项**11.1 Consideration of strength of film package / 包装薄膜注意事项****1) Soft Aluminum foil/铝箔软包装**

Easily damaged by sharp edge parts such as pins and needles, Ni-tabs, so don't strike by those sharp parts.

铝箔软包装比较容易被锐利部件刺损，如针尖、镍带，所以不要用这此锐利的部件刻划电池。

2) Sealed edge may be damaged by heat above 100°C, bend or fold sealed edge.

封边被加热到 100°C 以上以及弯折封边都容易使封边受损。

11.2 Prohibition short circuit/禁止电池短路

Never make short circuit cell. It generates very high current which causes heating of the cells and may cause electrolyte leakage, gassing or explosion that are very dangerous.

The LIP tabs may be easily short-circuited by putting them on conductive surface.

Such outer short circuit may lead to heat generation and damage of the cell.

An appropriate circuitry with PCM shall be employed to protect accidental short circuit of the battery pack.

避免电池短路。短路会产生很高的电流而使电池发热以及电解液泄漏，产生有毒气体或爆炸是非常危险的。极片连接在导电物体表面很容易短路，外部短路会导致发热及损害电池。选用一个适当的保护电路可以在意外短路时保护电池。

11.3. Mechanical shock/机械撞击

LIP cells have less mechanical endurance than metal-can-cased LIB.

Falling, hitting, bending, etc. may cause degradation of LIP characteristics.

聚合物电池比金属外壳电池的机械耐久性更小。

跌落、碰撞、弯曲等等都可能会降低聚合物电池的性能。

11.4 Handling of tabs/极耳操作注意事项

The battery tabs are not so stubborn especially for aluminum tab.

Don't bend tab.

Do not bend tabs unnecessarily.

极耳的机械强度并非异常坚固，特别是铝片。没有必要时禁止弯折极片。

12 Notice for Designing Battery Pack/ 电池外壳设计注意事项**12.1 Pack toughness/外壳坚韧度**

Battery pack should have sufficient strength and the LIP cell inside should be protected from mechanical shocks.

电池外壳应该有足够的机械强度使聚合物电池免受机械撞击。

12.2 Cell fixing/电池的固定

The LIP cell should be fixed to the battery pack by its large surface area.

No cell movement in the battery pack should be allowed.

电池最大面积的一面应该固定在外壳上，安装后电池不能有松动。

12.3 Inside design/外壳内部设计

No sharp edge components should be insides the pack containing the LIP cell.

外壳内安装电池的部位不应有锋锐边。

12.4 Tab connection /极片连接

Ultrasonic welding or spot welding is recommended for LIP tab connection method.

Battery pack should be designed that shear force are not applied to the LIP tabs.

If apply manual solder method to connect tab with PCM, below notice is very important to ensure battery performance:

1) The solder iron should be temperature controlled and ESD safe;

2) Soldering temperature should not exceed 350°C;

3) Soldering time should not be longer than 3s;

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- 4) Soldering times should not exceed 5 times, Keep battery tab cold down before next time soldering;
 - 5) Directly heat cell body is strictly prohibited, Battery may be damaged by heat above approx. 100°C
- 建议使用超声波或点焊焊接方法；外壳设计应使极片不受外力。

如果使用人工焊接保护板，下面的注意事项对于确保电池性能非常重要：

- 1) 焊接铬铁的温度必须可控且可防静电；
- 2) 焊接时铬铁的温度不能超过 350°C；
- 3) 焊锡时间不能超过 3 秒钟；
- 4) 焊锡次数不能超过 5 次，待极片冷却后才能进行下一次焊锡；
- 5) 严禁直接加热电芯，高于 100°C 度会损害电芯。

12.5 For mishaps/针对意外事件

Battery pack should be designed not to generate heat even when leakage occurs due to mishaps.

- 1) Isolate PCM (Protection Circuit Module) from leaked electrolyte as perfectly as possible.
- 2) Avoid narrow spacing between bare circuit patterns with different voltage.
(Including around connector)

LIP battery should not have liquid from electrolyte, but in case if leaked electrolyte touch bare circuit patterns, higher potential terminal material may dissolve and precipitate at the lower potential terminal, and may cause short circuit. The design of the PCM must have this covered.

发生意外时外壳设计应考虑即使在电池出现漏液时也不会发热。

- 1) 尽量把保护电路与渗漏的电解液隔离开。
- 2) 在不同的电压情况下避免出现小间距的裸露电路——包括插头周围。
- 3) 聚合物电池不应该有来自电解液的液体，但是一旦发生电解液渗漏触及裸露电路，高电势端子材料可能会溶解然后沉淀到低电势端子，可能会造成短路。保护板的设计必须含有覆盖保护层。

13 Notice for Assembling Battery Pack 电池装配注意事项

Shocks, high temperature, or contacts of sharp edge components should not be allowed in battery pack assembling process.

在电池装配过程中不允许撞击、高温或接触尖锐部分。

14 Others/其它

14.1 Cell connection/电池连接

- 1) Direct soldering of wire leads or devices to the cell is strictly prohibited.
- 2) Lead tabs with per-soldered wiring shall be spot welded to the cells.

Direct soldering may cause damage of components, such as separator and insulator, by heat generation.

- 1) 严禁直接焊接引线或设备到电池上。
- 2) 极片在焊接引线之前应该先点焊到电池上，直接与电池热焊接，产生的热量会使电池的隔离体及绝缘体受损。

14.2 Prevention of short circuit within a battery pack/电池内部的短路预防

Enough insulation layers between wiring and the cells shall be used to maintain extra safety protection. The battery pack shall be structured with no short circuit within the battery pack, which may cause generation of smoke or firing.

在电池和引线之间应该有足够的绝缘层用于安全保护。电池的包装构成应没有导致起烟起火的短路情况。

14.3 Prohibition of dis assembly/禁止拆卸

- 1) Never disassemble the cells

The disassembling may generate internal short circuit in the cell, which may cause gassing, firing, explosion, or other problems.

- 2) Electrolyte is harmful

LIP battery should not have liquid from electrolyte flowing, but in case the electrolyte come into contact with the skin, or eyes, physicians shall flush the electrolyte immediately with fresh water and medical advice is to be sought.

ID 09-03

1) 不要拆卸电池。

拆卸电池会发生电池内部短路，会引起起火、爆炸、有害气体或者其它问题。

2) 电解液是有害的

万一电解液沾到皮肤、进入眼睛，应立即用清水冲洗以及求助医生。

14.4 Prohibition of dumping of cells into fire/不要把电池倾倒在火中

Never incinerate nor dispose the cells in fire. These may cause explosion of the cells, which is very dangerous and is prohibited.

不要焚毁电池，否则会致电池爆炸，这个很危险，必须禁止。

14.5 Prohibition of cells immersion into liquid such as water/禁止浸泡电池

The cells shall never be soaked with liquids such as water, seawater, drinks such as soft drinks, juices, coffee or others.

请不要把电池浸泡在液体当中，像清水、海水，及非酒精饮料、果汁、咖啡或者其它的饮料。

14.6 Battery cells replacement/更换电池

The battery replacement shall be done only by either cells supplier or device supplier and never be done by the user.

更换电池应由电池生产商或设备供应商完成，用户不要自行更换。

14.7 Prohibition of use of damaged cells/禁止使用损坏的电池

The cells might be damaged during shipping by shock. If any abnormal features of the cells are found such as damages in a plastic envelop of the cell, deformation of the cell package, smelling of an electrolyte, an electrolyte leakage and others, the cells shall never be used any more.

The Cells with a smell of the electrolyte or a leakage shall be placed away from fire to avoid firing or explosion.

电池可能在出货途中碰撞而受损。如果发现电池有异常，例如包装损坏、电池包裹变形，有电解液的味道、发现漏液等等，不要再使用这些电池。

电池如果有电解液的味道或者出现漏液，电池放置应该远离火源避免起火及爆炸。

15 Period of Warranty/保质期

The period of warranty is a year from the date of shipment. Great Power guarantees to give a replacement in case of cells with defects proven due to manufacturing process instead of the customer abuse and misuse.

电池的保质期从出货之日算起为一年。如果电池的缺陷是在制造过程中形成的而不是由于用户滥用及错误使用造成，本公司负责退换电池。

16 Storage of the Batteries/电池的存放

The batteries should be stored at room temperature, charged to about 30% to 50% of capacity.

We recommend that batteries be charged about once per half a year to prevent over discharge.

电池应当在室温下存放，应充到 30%至 50%的电量。如长时间储存，建议每半年充一次电以防止电池过放电。

17 Other The Chemical Reaction/其它化学反应

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. If the batteries cannot maintain a charge for long periods of time, even when they are charged correctly, this may indicate it is time to change the battery.

由于电池是利用化学反应的原理，所以随时间的增加电池的性能会降低，即使是存放很长一段时间而不使用。如果使用条件如充电、放电及周围环境温度等情形不在指定的使用范围内，会使缩短电池的使用寿命，或者会产生漏液导致设备损坏。如果电池长周期不能充电，即使充电方法正确，这样需要更换电池了。

18 Note/注释

Any other items which are not covered in this specification shall be agreed by both parties.

本说明书未包括事项应由双方协议确定。