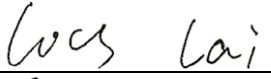
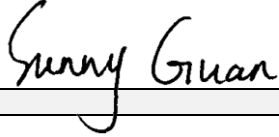




Test Report issued under the responsibility of:



<b>TEST REPORT</b> <b>IEC 62133-2</b> <b>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 –</b> <b>Part 2: Lithium systems</b>	
Report Number.....	SZES220100039501
Date of issue.....	2022-03-31
Total number of pages .....	23 Pages
Name of Testing Laboratory preparing the Report .....	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
Applicant's name .....	MSR Electronics GmbH
Address.....	Mettlenstrasse 6, CH-8472 Seuzach, Switzerland
<b>Test specification:</b>	
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
<b>Copyright © 2017 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System). All rights reserved.</b> This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context. 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. <b>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.</b>	
<b>General disclaimer:</b>	
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.	

<b>Test item description</b> .....	Lithium-ion Polymer Rechargeable Battery	
<b>Trade Mark</b> .....	--	
<b>Manufacturer</b> .....	Intellect Pioneering Battery Technology Co., Ltd. No. 30 Xinghua Road East, Xinghua Industrial Park, Ronggui Street, Shunde, Foshan, Guangdong, China	
<b>Model/Type reference</b> .....	IP982245	
<b>Ratings</b> .....	Rated Voltage: 3,7 V d.c. Rated Capacity: 1000 mAh	
<b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b>		
<input checked="" type="checkbox"/>	<b>CB Testing Laboratory:</b>	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
<b>Testing location/ address</b> .....		No.2, Jianghao Industrial Factory Area, No.430, Jihua Road, Bantian Street, Longgang District, Shenzhen, Guangdong, China
<b>Tested by (name, function, signature)</b> .....		Locs Lai / Project Engineer 
<b>Approved by (name, function, signature)</b> .....		Sunny Guan / Report Reviewer 
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 1:</b>	N/A
<b>Testing location/ address</b> .....		
<b>Tested by (name, function, signature)</b> .....		
<b>Approved by (name, function, signature)</b> .....		
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 2:</b>	N/A
<b>Testing location/ address</b> .....		
<b>Tested by (name + signature)</b> .....		
<b>Witnessed by (name, function, signature) :</b>		
<b>Approved by (name, function, signature)</b> .....		
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 3:</b>	N/A
<input type="checkbox"/>	<b>Testing procedure: CTF Stage 4:</b>	N/A
<b>Testing location/ address</b> .....		
<b>Tested by (name, function, signature)</b> .....		
<b>Witnessed by (name, function, signature) :</b>		
<b>Approved by (name, function, signature)</b> .....		
<b>Supervised by (name, function, signature) :</b>		

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

Attachment 1: 4 pages of Photos;  
 Attachment 2: 2 pages of Information for safety;  
 Attachment 3: 1 page of Packaging;  
 Attachment 4: 2 pages of Product specification;  
 Attachment 5: 1 page of ISO 9001 certificate.

**Summary of testing:**

The sample(s) tested complies with the requirements of IEC 62133-2: 2017.

No decision rule is specified by 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")

Remark: Battery and cell were considered and tested according to standard in this report.

**Tests performed (name of test and test clause):**

- 5.2 Insulation resistance
- 7.2.1 Continuous charging at constant voltage (cells)
- 7.2.2 Case stress at high ambient temperature (battery)
- 7.3.1 External short circuit (cell)
- 7.3.2 External short circuit (battery)
- 7.3.3 Free fall
- 7.3.4 Thermal abuse (cells)
- 7.3.5 Crush (cells)
- 7.3.6 Over-charging of battery
- 7.3.7 Forced discharge (cells)
- 7.3.8 Mechanical tests (batteries)
- 7.3.9 Design evaluation – Forced internal short circuit (cells)
- Annex D Measurement of the internal AC resistance for coin cells

**Testing location:**

SGS-CSTC Standards Technical Services Co., Ltd.  
 Shenzhen Branch  
 No.2, Jianghao Industrial Factory Area, No.430,  
 Jihua Road, Bantian Street, Longgang District,  
 Shenzhen, Guangdong, China

**Summary of compliance with National Differences (List of countries addressed):****EU Group difference**

- The product fulfils the requirements of EN 62133-2: 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.



Remark: 'YYYY/WW' represents the date of manufacture:

YYYY stands for production year, WW stands for production week.

<b>Test item particulars</b> .....	--
<b>Classification of installation and use</b> .....	--
<b>Supply Connection</b> .....	--
<b>Recommend charging method declared by the manufacturer</b> .....	CC/CV
<b>Discharge current (0,2 It A)</b> .....	0,2 A
<b>Specified final voltage</b> .....	3,0 V
<b>Upper limit charging voltage per cell</b> .....	4,2 V
<b>Maximum charging current</b> .....	10-25°C: 475 mA 25-45°C: 950 mA
<b>Charging temperature upper limit</b> .....	45°C
<b>Charging temperature lower limit</b> .....	10°C
<b>Polymer cell electrolyte type</b> .....	<input checked="" type="checkbox"/> gel polymer <input type="checkbox"/> solid polymer <input type="checkbox"/> N/A
<b>Possible test case verdicts:</b>	
- 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)
<b>Testing</b> .....	
<b>Date of receipt of test item</b> .....	2022-01-20
<b>Date (s) of performance of tests</b> .....	2022-01-25 to 2022-03-24
<b>General remarks:</b>	
<p>"(See Enclosure #)" refers to additional information appended to the report.  "(See appended table)" refers to a table appended to the report.</p> <p><b>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</b></p> <p>This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="http://www.sgs.com/en/Terms-and-Conditions.aspx">http://www.sgs.com/en/Terms-and-Conditions.aspx</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx">http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx</a>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.</p>	

<b>Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:</b>	
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"/> <b>Yes</b> <input checked="" type="checkbox"/> <b>Not applicable</b>
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies).....:</b> Same as manufacturer	
<b>General product information and other remarks:</b>	
Product description:	Lithium-ion Polymer Rechargeable Battery
Model of pack:	IP982245
Designation of pack:	1ICP10/22/45
Rated Voltage:	3,7 V d.c.
Rated Capacity:	1000 mAh
Maximum charge current:	10-25°C: 475 mA 25-45°C: 950 mA
Number of cells in battery pack:	One
Model of cell:	IP982245
Designation of cell:	ICP10/22/45
Rated Voltage of cell:	3,7 V
Rated Capacity of cell:	1000 mAh
Maximum charge current:	10-25°C: 475 mA 25-45°C: 950 mA
Remark: See Attachment 4 for more detailed product specification.	

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
<b>4</b>	<b>PARAMETER MEASUREMENT TOLERANCES</b>		P
	Parameter measurement tolerances		P
<b>5</b>	<b>GENERAL SAFETY CONSIDERATIONS</b>		P
<b>5.1</b>	<b>General</b>		P
	Cells and batteries so designed and constructed that they are safe under conditions of both intended use and reasonably foreseeable misuse		P
<b>5.2</b>	<b>Insulation and wiring</b>		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 externally exposed metal surface	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
<b>5.3</b>	<b>Venting</b>		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	Cell: Seal the seam around the aluminium foil as the venting mechanism. Battery: Same as 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	No encapsulation used	N/A
<b>5.4</b>	<b>Temperature, voltage and current management</b>		P
	Batteries are designed such that abnormal temperature rise conditions are prevented	Protection circuit was used.	P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	Protection circuit was used.	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	Charge and discharge instructions were provided.	P
<b>5.5</b>	<b>Terminal contacts</b>		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
<b>5.6</b>	<b>Assembly of cells into batteries</b>		P
5.6.1	General		P
	Each battery have an independent control and protection for current, voltage, temperature and any other parameter required for safety and to maintain the cells within their operating region		P
	This protection may be provided external to the battery such as within the charger or the end devices	The protection is within the battery	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	Single battery pack without separate case	N/A
	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly		P
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate circuitry to prevent operation of cells outside the limits specified by the cell manufacturer		N/A
	Protective circuit components added as appropriate and consideration given to the end-device application		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		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	Single cell battery The charging voltage of the cell does not exceed the upper limit of the charging voltage 4,2 V.	P

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	Single cell battery	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	Single cell battery	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		P
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry incorporated into the battery management system		N/A
5.6.3	Mechanical protection for cells and components of batteries		P
	Mechanical protection for cells, cell connections and control circuits within the battery provided to prevent damage as a result of intended use and reasonably foreseeable misuse		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	The mechanical protection will be provided by the end product enclosure.	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	Should be considered in end product.	N/A
<b>5.7</b>	<b>Quality plan</b>		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	ISO 9001 certificate was submitted. See Attachment 5 for detail.	P
<b>5.8</b>	<b>Battery safety components</b>		P
	According annex F		P
<b>6</b>	<b>TYPE TEST AND SAMPLE SIZE</b>		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	All the cells or batteries are not more than six months old.	P
	Coin cells with resistance $\leq 3 \Omega$ (measured according annex D) are tested according table 1	Not coin cell	N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of $20 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$		P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and overdischarge protection		P
	When conducting the short-circuit test, consideration given to the simulation of any single fault condition that is likely to occur in the protecting circuit that would affect the short-circuit test		P
<b>7</b>	<b>SPECIFIC REQUIREMENTS AND TESTS</b>		P
<b>7.1</b>	<b>Charging procedure for test purposes</b>		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 $20 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$ , using the method declared by the manufacturer		P
	Prior to charging, the battery have been discharged at $20 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$ at a constant current of 0,2 It A down to a specified final voltage		P
7.1.2	Second procedure		P
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9		P

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		P
<b>7.2</b>	<b>Intended use</b>		P
7.2.1	Continuous charging at constant voltage (cells)		P
	Fully charged cells are subjected for 7 days to a charge using the charging method for current and standard voltage specified by the cell manufacturer		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)	No moulded case	N/A
	Oven temperature (°C) .....		—
	Results: No physical distortion of the battery case resulting in exposure of internal protective components and cells		N/A
<b>7.3</b>	<b>Reasonably foreseeable misuse</b>		P
7.3.1	External short-circuit (cell)		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)		P
	The batteries were tested until one of the following occurred:		P
	- 24 hours elapsed; or	Applies to samples in normal condition Rapid decline in short circuit current, protective electronic circuit operate	P
	- The case temperature declined by 20 % of the maximum temperature rise	Applies to samples in single fault condition	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		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		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A single fault applies to protective component parts such as MOSFET, fuse, thermostat or positive temperature coefficient (PTC) thermistor	Single fault applies to MOSFET (U2)	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)		P
	Oven temperature (°C)..... :	130°C	—
	Results: No fire. No explosion		P
7.3.5	Crush (cells)		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		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		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)		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

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	If the discharge voltage does not reach the negative value of upper limit charging voltage within the testing duration, the test is terminated at the end of the testing duration		P
	Results: No fire. No explosion..... :	(See appended table 7.3.7)	P
7.3.8	Mechanical tests (batteries)		P
7.3.8.1	Vibration		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)	Lithium-ion Polymer Cell as declared by the manufacturer	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

<b>8</b>	<b>INFORMATION FOR SAFETY</b>		P
<b>8.1</b>	<b>General</b>		P
	Manufacturers of secondary cells ensure that information is provided about current, voltage and temperature limits of their products	See Attachment 4 for detail.	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	See Attachment 2 for detail.	P
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		N/A
	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
<b>8.2</b>	<b>Small cell and battery safety information</b>	Small cell and battery	P
	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- Keep small cells and batteries which are considered swallowable out of the reach of children		P
	- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion		P
	- In case of ingestion of a cell or battery, seek medical assistance promptly		P
<b>9</b>	<b>MARKING</b>		P
<b>9.1</b>	<b>Cell marking</b>	Only battery will be marked.	N/A
	Cells marked as specified in IEC 61960, except coin cells		N/A
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity		N/A
	By agreement between the cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked		N/A
<b>9.2</b>	<b>Battery marking</b>		P
	Batteries marked as specified in IEC 61960, except for coin batteries	See marking plate for detail.	P
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity. Batteries also marked with an appropriate caution statement	Not coin batteries	N/A
	Terminals have clear polarity marking on the external surface of the battery		P
	Batteries with keyed external connectors designed for connection to specific end products need not be marked with polarity markings if the design of the external connector prevents reverse polarity connections		N/A
<b>9.3</b>	<b>Caution for ingestion of small cells and batteries</b>	Small cell and battery	P
	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		P
	When small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion given on the immediate package		N/A
<b>9.4</b>	<b>Other information</b>		P

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

	Storage and disposal instructions	Storage and disposal instructions were supplied with the battery. See Attachment 2 for detail	P
	Recommended charging instructions	Recommended charging instructions were supplied with the battery. See Attachment 4 for detail	P

<b>10</b>	<b>PACKAGING AND TRANSPORT</b>		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	See Attachment 3 for detail	P

<b>ANNEX A</b>	<b>CHARGING AND DISCHARGING RANGE OF SECONDARY LITHIUM ION CELLS FOR SAFE USE</b>		N/A
<b>A.1</b>	<b>General</b>		P
<b>A.2</b>	<b>Safety of lithium ion secondary battery</b>		P
<b>A.3</b>	<b>Consideration on charging voltage</b>		P
A.3.1	General		P
A.3.2	Upper limit charging voltage		P
A.3.2.1	General		P
A.3.2.2	Explanation of safety viewpoint		P
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	The upper limit charging voltage is 4,2 V during test.	N/A
<b>A.4</b>	<b>Consideration of temperature and charging current</b>		P
A.4.1	General		P
A.4.2	Recommended temperature range		P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied	The recommended temperature range: 10 - 25°C: 475 mA, 25 - 45°C: 950 mA in specification.	N/A
A.4.3	High temperature range	The upper charging temperature is 45°C	N/A
A.4.3.1	General		N/A
A.4.3.2	Explanation of safety viewpoint		N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
A.4.3.3	Safety considerations when specifying charging conditions in the high temperature range		N/A
A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range		N/A
A.4.4	Low temperature range	The upper charging temperature is 10°C	N/A
A.4.4.1	General		N/A
A.4.4.2	Explanation of safety viewpoint		N/A
A.4.4.3	Safety considerations, when specifying charging conditions in the low temperature range		N/A
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range		N/A
A.4.5	Scope of the application of charging current		P
A.4.6	Consideration of discharge		P
A.4.6.1	General		P
A.4.6.2	Final discharge voltage and explanation of safety viewpoint		P
A.4.6.3	Discharge current and temperature range		P
A.4.6.4	Scope of application of the discharging current		P
<b>A.5</b>	<b>Sample preparation</b>		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
<b>A.6</b>	<b>Experimental procedure of the forced internal short-circuit test</b>		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

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
A.6.8	Protective equipment for safety		N/A
A.6.9	Caution in the case of fire during disassembling		N/A
A.6.10	Caution for the disassembling process and pressing the electrode core		N/A
A.6.11	Recommended specifications for the pressing device		N/A
<b>ANNEX B</b>	<b>RECOMMENDATIONS TO EQUIPMENT MANUFACTURERS AND BATTERY ASSEMBLERS</b>		<b>P</b>
<b>ANNEX C</b>	<b>RECOMMENDATIONS TO THE END-USERS</b>		<b>N/A</b>
<b>ANNEX D</b>	<b>MEASUREMENT OF THE INTERNAL AC RESISTANCE FOR COIN CELLS</b>		<b>N/A</b>
<b>D.1</b>	<b>General</b>	Not coin cell	N/A
<b>D.2</b>	<b>Method</b>		N/A
	A sample size of three coin cells is required for this measurement..... :		N/A
	Coin cells with an internal resistance of less than or equal to 3 $\Omega$ are subjected to the testing according to Clause 6 and Table 1		N/A
	Coin cells with an internal resistance greater than 3 $\Omega$ require no further testing		N/A
<b>ANNEX E</b>	<b>PACKAGING AND TRANSPORT</b>		<b>P</b>
<b>ANNEX F</b>	<b>COMPONENT STANDARDS REFERENCES</b>		<b>P</b>

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 <sup>1)</sup>
Cell	Intellect Pioneering Battery Technology Co., Ltd.	IP982245	3,7 V 1000 mAh	IEC 62133-2: 2017 EN 62133-2: 2017	Tested with appliance
- Electrolyte	SHENZHEN CAPCHEM TECHNOLOGY CO., LTD	XZB-IP-001	EC+DEC+PC+LiPF <sub>6</sub> Conductivity: 7,4 mS/cm	--	--
- Separator	Celgard	CD20	PE Dimensions: 1090 mm * 40,5 mm * 0,02 mm Shut down temperature: 130°C	--	--
- Anode	Hunan Zhongke Shinzoom CO., LTD	HRG-3	Graphite Dimensions: 516 mm * 38 mm * 0,132 mm Specific capacity: 340 mAh/g	--	--
- Cathode	Hunan Shanshan Energy Technology Co., Ltd.	LC800D	LiCoO <sub>2</sub> Dimensions: 485 mm * 37 mm * 0,117mm Specific capacity: 143 mAh/g	--	--
Protection IC (U1)	SEIKO	S-8261DAA- M6T1U	Overcharge Detection Voltage: 4,280 ± 0,025 V Over-discharge Detection Voltage: 3,0 ± 0,05 V Operating temperature range: -40 - 85 °C	--	--
MOSFET (U2)	DP	DP8205	Id: 5 A Vds: 20 V Operating temperature range: -55 - 150 °C	--	--

IEC 62133-2					
Clause	Requirement + Test	Result - Remark			Verdict
PCB	SHEN ZHEN JIRUIDA CIRCUIT TECHNOLOGY CO LTD	JRD-S	V-0 130°C	UL796	UL (E340032)
Lead wires	DONGGUAN ZHENGWEI ELECTRIC WIRE & CABLE INDUSTRY CO LTD	1571	28 AWG Tmax: 80°C Vmax: 30 V	UL758	UL (E326510)
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

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

7.2.1	TABLE: Continuous charging at constant voltage (cells)				P
Sample no.	Recommended charging voltage V <sub>c</sub> (Vdc)	Recommended charging current I <sub>rec</sub> (A)	OCV before test (Vdc)	Results	
Cell: IP982245 (#1)	4,2	0,95	4,159	Pass	
Cell: IP982245 (#2)	4,2	0,95	4,163	Pass	
Cell: IP982245 (#3)	4,2	0,95	4,161	Pass	
Cell: IP982245 (#4)	4,2	0,95	4,160	Pass	
Cell: IP982245 (#5)	4,2	0,95	4,157	Pass	
<b>Supplementary information:</b>					
- No fire or explosion					
- No leakage					

7.3.1	TABLE: External short-circuit (cell)					P
Sample no.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K)	Results	
<b>Samples charged at charging temperature upper limit<sup>1)</sup></b>						
Cell: IP982245 (#6)	54,8	4,171	87,8	49,3	Pass	
Cell: IP982245 (#7)	54,6	4,170	88,1	55,0	Pass	
Cell: IP982245 (#8)	54,4	4,172	88,2	54,5	Pass	
Cell: IP982245 (#9)	54,3	4,171	88,1	65,5	Pass	
Cell: IP982245 (#10)	54,3	4,173	88,0	46,3	Pass	
<b>Samples charged at charging temperature 25°C<sup>2)</sup></b>						
Cell: IP982245 (#11)	56,8	4,161	87,9	61,5	Pass	
Cell: IP982245 (#12)	56,4	4,163	88,0	54,0	Pass	
Cell: IP982245 (#13)	56,3	4,162	88,3	52,9	Pass	
Cell: IP982245 (#14)	56,3	4,163	88,3	53,9	Pass	
Cell: IP982245 (#15)	56,2	4,163	88,1	49,4	Pass	
<b>Samples charged at charging temperature lower limit<sup>3)</sup></b>						
Cell: IP982245 (#16)	55,5	4,114	88,0	52,8	Pass	
Cell: IP982245 (#17)	55,5	4,116	87,6	50,7	Pass	
Cell: IP982245 (#18)	55,2	4,114	88,0	58,9	Pass	
Cell: IP982245 (#19)	55,2	4,117	88,1	54,6	Pass	
Cell: IP982245 (#20)	55,0	4,118	88,2	64,0	Pass	

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

**Supplementary information:**

- No fire or explosion

<sup>1)</sup> Cells charged at 45°C by using 4,2 V and 0,95 A until the charging current reduced to 0,05 A;

<sup>2)</sup> Cells charged at 25°C by using 4,2 V and 0,95 A until the charging current reduced to 0,05 A;

<sup>3)</sup> Cells charged at 10°C by using 4,2 V and 0,475 A until the charging current reduced to 0,05 A.

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
Pack: IP982245 (#59)	23,5	4,162	88,5	--*	Normal	Pass
Pack: IP982245 (#60)	23,4	4,160	88,4	59,1	SC U2 PIN (1-3)	Pass
Pack: IP982245 (#61)	23,6	4,161	88,2	93,2	SC U2 PIN (1-3)	Pass
Pack: IP982245 (#62)	23,4	4,160	88,2	60,6	SC U2 PIN (1-3)	Pass
Pack: IP982245 (#63)	23,4	4,164	88,0	72,9	SC U2 PIN (1-3)	Pass

**Supplementary information:**

- No fire or explosion

--\* Shut down immediately and tested for 24 hours, no max. temperature was noted.

- SC = Short circuit

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
<b>Samples charged at charging temperature upper limit<sup>1)</sup></b>				
Cell: IP982245 (#39)	4,171	4,171	13,149	Pass
Cell: IP982245 (#40)	4,169	4,169	13,137	Pass
Cell: IP982245 (#41)	4,170	4,170	13,123	Pass
Cell: IP982245 (#42)	4,168	4,168	13,198	Pass
Cell: IP982245 (#43)	4,168	4,168	13,206	Pass
<b>Samples charged at charging temperature 25°C<sup>2)</sup></b>				
Cell: IP982245 (#44)	4,156	4,156	13,192	Pass
Cell: IP982245 (#45)	4,162	4,162	13,166	Pass
Cell: IP982245 (#46)	4,161	4,161	13,219	Pass
Cell: IP982245 (#47)	4,162	4,162	13,204	Pass

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

Cell: IP982245 (#48)	4,159	4,159	13,172	Pass
<b>Samples charged at charging temperature lower limit<sup>3)</sup></b>				
Cell: IP982245 (#49)	4,121	4,121	13,225	Pass
Cell: IP982245 (#50)	4,119	4,119	13,207	Pass
Cell: IP982245 (#51)	4,118	4,118	13,116	Pass
Cell: IP982245 (#52)	4,120	4,120	13,206	Pass
Cell: IP982245 (#53)	4,122	4,122	13,159	Pass
<b>Supplementary information:</b>				
- No fire or explosion				
- The maximum force of 13 kN ± 0,78 kN has been applied first, the forced was released.				
1) Cells charged at 45°C by using 4,2 V and 0,95 A until the charging current reduced to 0,05 A;				
2) Cells charged at 25°C by using 4,2 V and 0,95 A until the charging current reduced to 0,05 A;				
3) Cells charged at 10°C by using 4,2 V and 0,475 A until the charging current reduced to 0,05 A.				

7.3.6	TABLE: Over-charging of battery				P
Constant charging current (A) .....	2,0			—	
Supply voltage (Vdc) .....	5,88			—	
Sample no.	OCV before charging (Vdc)	Total charging time (minute)	Maximum outer case temperature (°C)	Results	
Pack: IP982245 (#67)	3,486	60	38,0	Pass	
Pack: IP982245 (#68)	3,463	60	38,3	Pass	
Pack: IP982245 (#69)	3,499	60	39,1	Pass	
Pack: IP982245 (#70)	3,481	60	38,1	Pass	
Pack: IP982245 (#71)	3,478	60	37,0	Pass	
<b>Supplementary information:</b>					
- No fire or explosion					
- Ambient temperature was 23,4 °C					

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: IP982245 (#54)	3,331	1,0	3,0	Pass	
Cell: IP982245 (#55)	3,344	1,0	3,0	Pass	
Cell: IP982245 (#56)	3,352	1,0	3,0	Pass	
Cell: IP982245 (#57)	3,342	1,0	3,0	Pass	
Cell: IP982245 (#58)	3,339	1,0	3,0	Pass	
<b>Supplementary information:</b>					
- No fire or explosion					

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

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	
Pack: IP982245 (#72)	4,162	4,161	17,54	17,54	Pass	
Pack: IP982245 (#73)	4,159	4,157	17,53	17,53	Pass	
Pack: IP982245 (#74)	4,163	4,161	17,55	17,55	Pass	
<b>Supplementary information:</b> - No fire or explosion - No rupture - No leakage - No venting						

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	
Pack: IP982245 (#75)	4,160	4,158	17,62	17,62	Pass	
Pack: IP982245 (#76)	4,164	4,162	17,58	17,58	Pass	
Pack: IP982245 (#77)	4,161	4,160	17,59	17,59	Pass	
<b>Supplementary information:</b> - No fire or explosion - No rupture - No leakage - No venting						

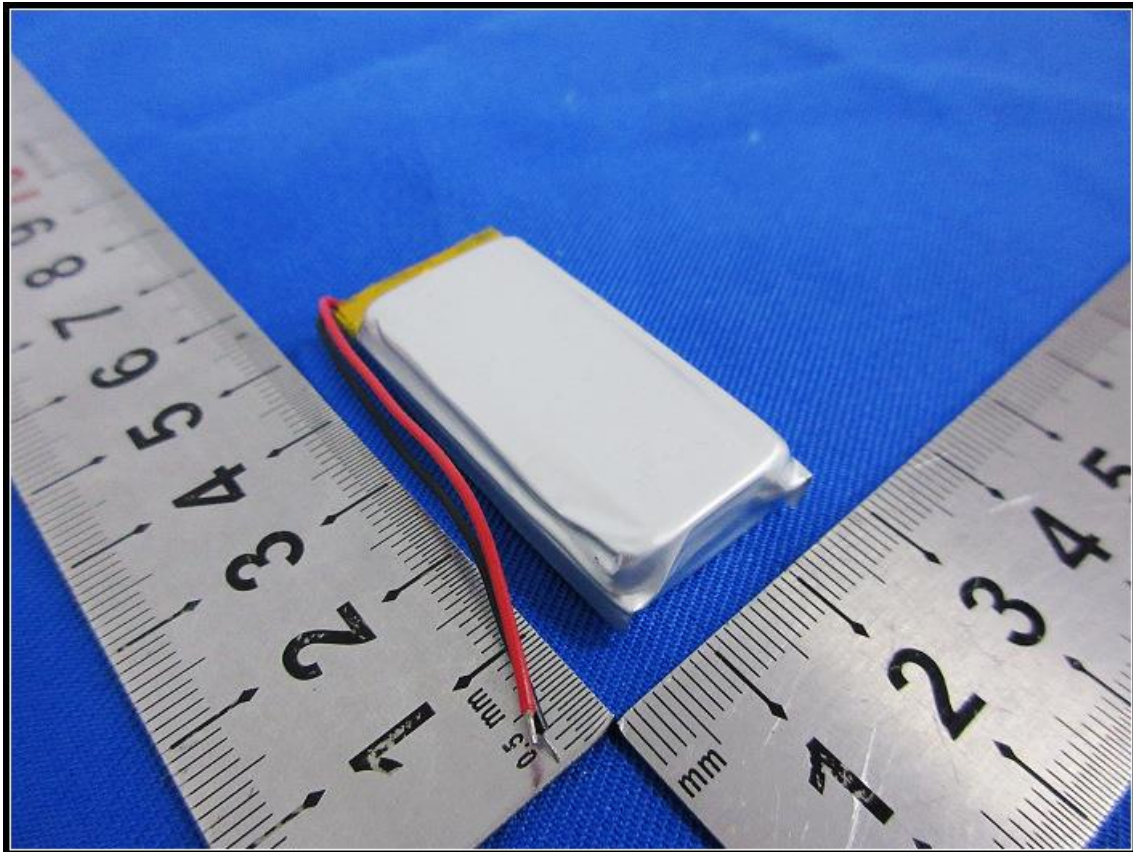
7.3.9	TABLE: Forced internal short circuit (cells)					N/A
Sample no.	Chamber ambient T (°C)	OCV before test (Vdc)	Particle location <sup>1)</sup>	Maximum applied pressure (N)	Results	
<b>Samples charged at charging temperature upper limit</b>						
--	--	--	--	--	--	
<b>Samples charged at charging temperature lower limit</b>						
--	--	--	--	--	--	
<b>Supplementary information:</b> --						

D.2	TABLE: Internal AC resistance for coin cells				N/A
Sample no.	Ambient T (°C)	Store time (h)	Resistance Rac (Ω)	Results <sup>1)</sup>	
--	--	--	--	--	
<b>Supplementary information:</b> --					

---End report---

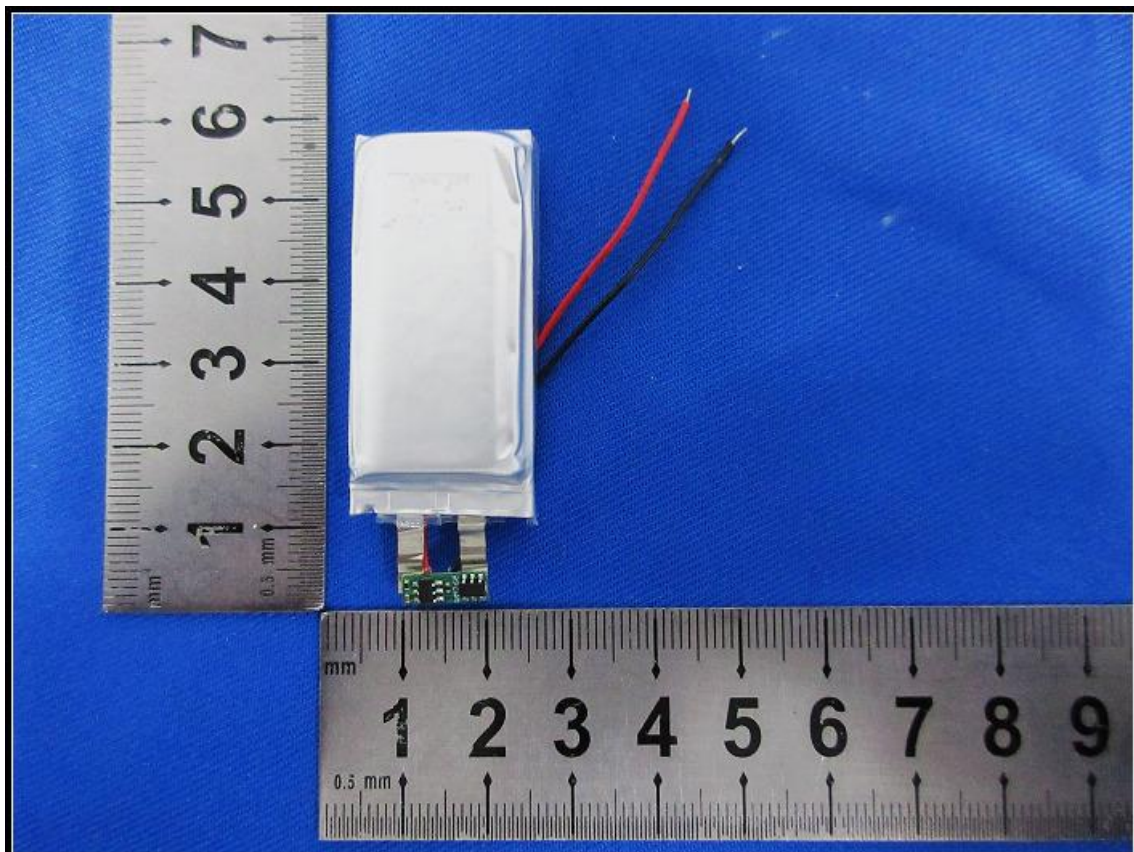
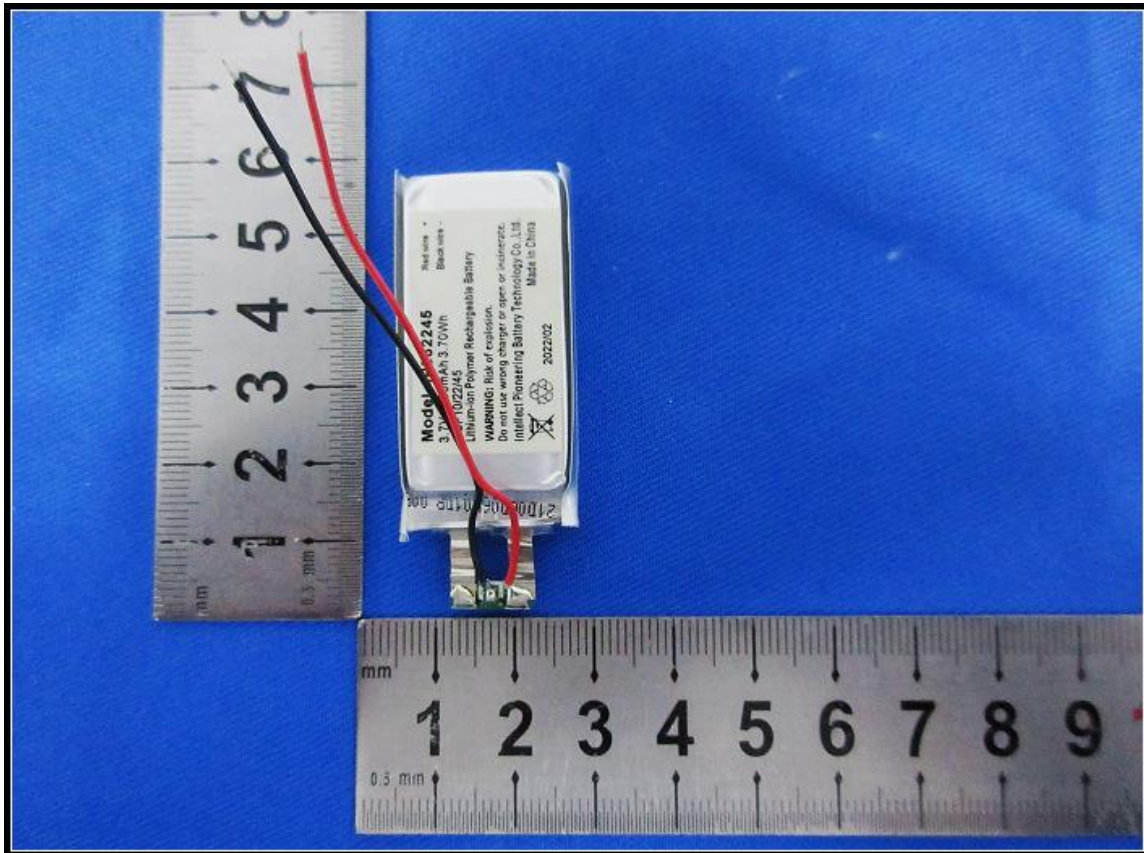
**Attachment 1 Photo documentation**

Whole unit



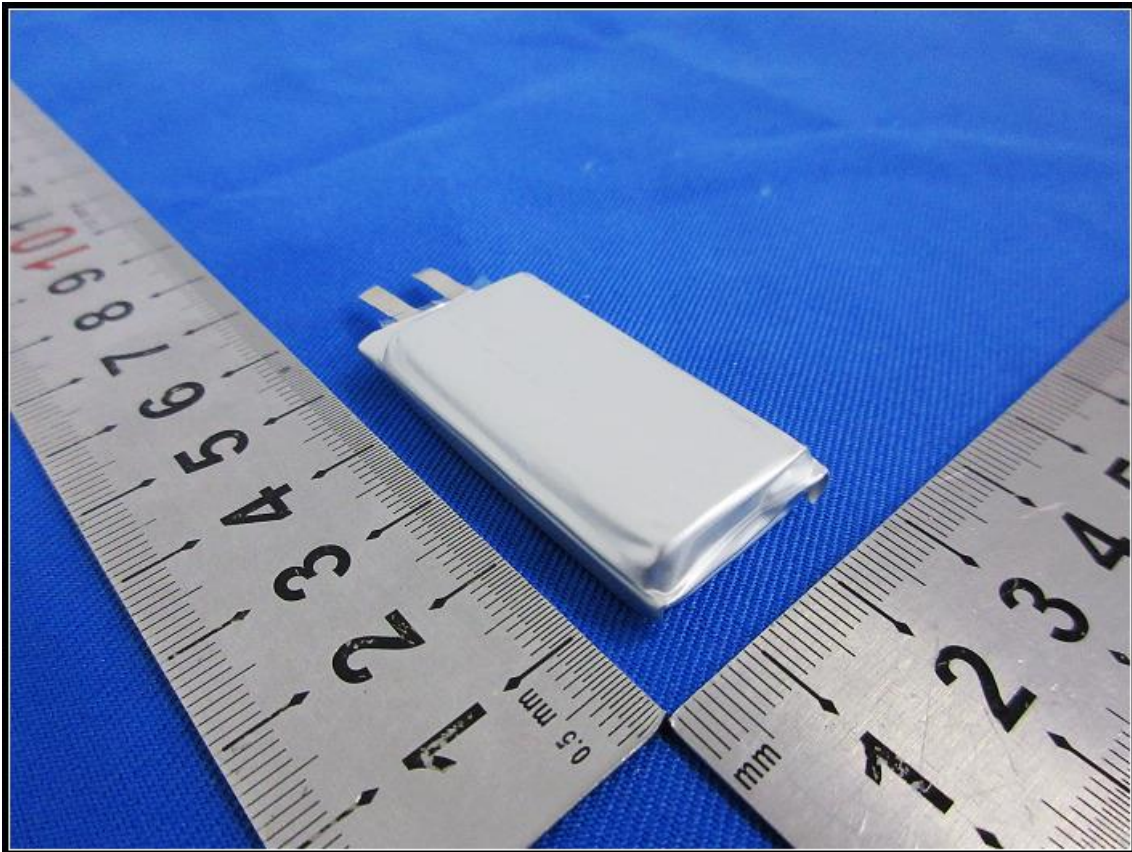
Attachment 1 Photo documentation

Internal view



Attachment 1 Photo documentation

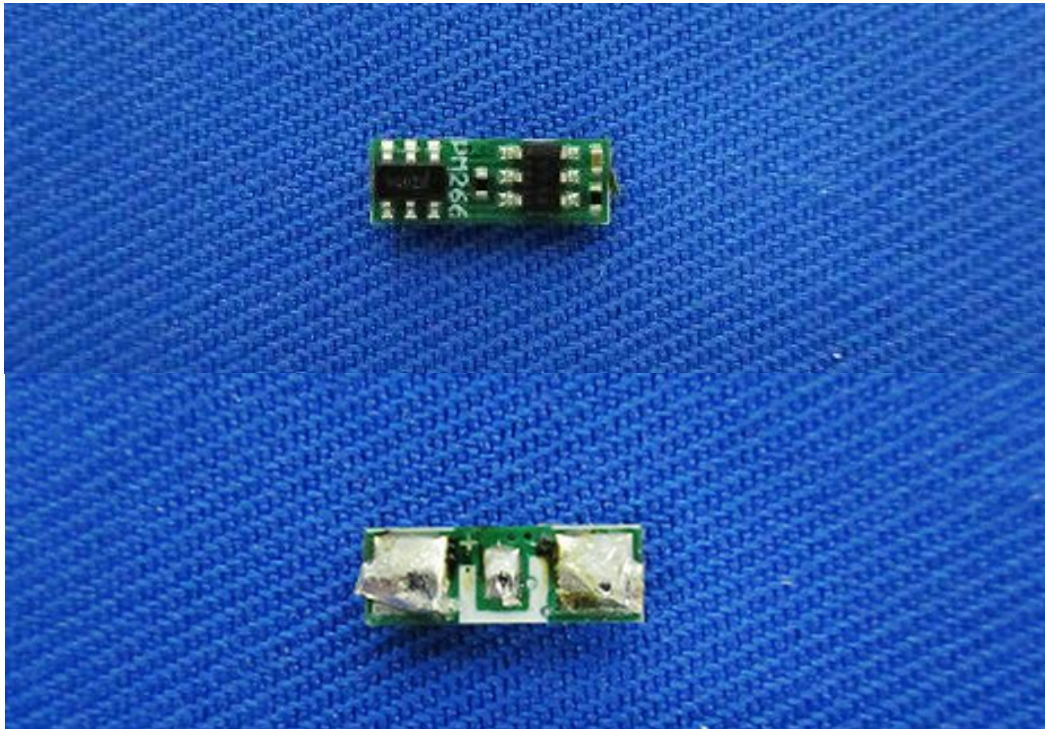
Cell



Attachment 1 Photo documentation

PCB

---



- - - End of Attachment 1 - - -

### Attachment 2 Information for safety

#### 9.4. 电池短路 Battery Short Circuit

不要让电池短路，电池短路会使电池发热，严重的会导致起火。如果电池的结构被破坏，多次瞬时的短路会减少电池的服务寿命，严重的会导致电池起火。电池短路会引起电池和线接头处温度升高，避免与之直接接触，以免烧伤皮肤。

Do not short-circuit a battery. A short circuit can result in over-heating of the terminals and provide an ignition source. More than a momentary short circuit will generally reduce the battery service life and can lead to ignition of surrounding materials or materials within the battery if the seal integrity is damaged. Extended short-circuiting creates high temperature in the battery and at the terminals. Physical contact to high temperatures can cause skin burns. In addition, extended short-circuit may cause the battery to flame.

#### 9.5. 人体接触 Body Contact

避免与损坏或破裂的电池原料接触。

Avoid contact with the materials from a damaged or ruptured battery.

接触眼睛：应立即用清水冲洗眼睛不少于 15 分钟，并及时接受医生治疗。

Eye contact: Washing immediately with plenty of water for at least 15 minutes. Get medical contact.

接触皮肤：应立即用清水和肥皂冲洗。

Skin Contact: Washing immediately with water and soap.

吸入气体：应立即呼吸新鲜空气，并及时接受医生治疗。

Inhalation of Vented Gas: Remove to fresh air. Get medical contact in time.

误食：立即接受医生治疗。

Ingestion: Get medical contact immediately.

#### 9.6. 电池存放 Battery Storage

请将电池放在儿童无法拿到的地方。

Keep away battery from children.

电池存放应注意避免其短路。

Do not store battery in a manner that allows terminals to short circuit.

不要将电池放置在热源附近或长时间暴露在阳光下，温度的上升会缩短电池的使用寿命。

Do not place battery near heating sources, nor exposed to direct sunlight for long periods. Elevated temperatures can result in reduced battery service life.

不要将电池存放在其他损害电池或有安全隐患的地方。

Do not store battery in any place where will damage battery or cause safety matter.

#### 9.7. 危险操作 Dangerous Operation

严禁把电池的正负极接反。

Prohibit reversing battery polarity within a battery assembly.

不要将电池或电池的局部弯曲、折叠、这样会破坏电池，严重的会导致电池鼓胀、漏液、起火或爆炸。

Do not bend, fold or fall the battery or part of the battery. It may cause the battery be damaged and result in the battery swelling, leaking, explosion or ignition

不要将电池加热或将电池扔进火里、水里或是其它液体中。

**Attachment 2 Information for safety**

Do not heat or dispose the battery into fire, water or other liquids.

不要将电池放到微波炉、洗衣机或是烘干机里。

Do not put the battery into microwave, washing machine or drying machine.

不要将电池放在烘箱上。

Do not put the battery onto oven.

不要在其他高温环境下放置或使用电池。

Do not put or operate battery under other high temperature conditions.

不要使用已损坏的电池。

Do not use a damaged battery.

不要将不同型号的电池混合一起。避免将新的和旧的或不同型号、不同规格、不同化学成份的电池配对。

Do not mix batteries and types. Avoid using old and new batteries or batteries of different sizes, different chemistry or types in the same battery assembly.

**9.8. 电池分解 Battery Disassembly**

不要分解电池。

Never disassemble a battery.

如果电池无意中被挤压，导致包容物泄露，必须戴橡胶手套处理，避免吸入泄露的气体。

Should a battery unintentionally be crushed, thus releasing its contents, rubber gloves must be used to handle all battery components. Avoid inhalation of any vapors that may be emitted.

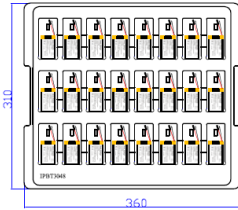
4.11.	存储 Storage	项目 Item	要求 Requirement
		小于 1 个月 Less than 1 month	-20℃~+60℃, 65±20%RH
		小于 3 个月 Less than 3 month	-20℃~+45℃, 65±20%RH
		小于 12 个月 Less than 12 month	-20℃~+25℃, 65±20%RH
		储存荷电状态 (50%SOC)	

- Keep small cells and batteries which are considered swallowable out of the reach of children.
- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion.
- In case of ingestion of a cell or battery, seek medical assistance promptly.

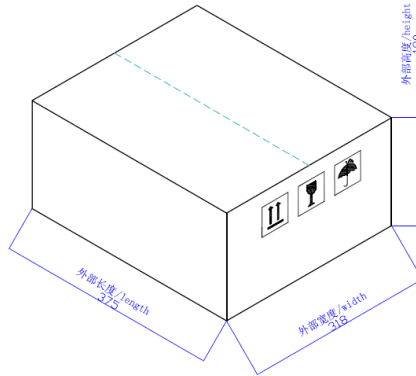
— When disposing of secondary cells or batteries, keep cells or batteries of different electrochemical systems separate from each other.(电池处置信息)

**Attachment 3 Packaging**

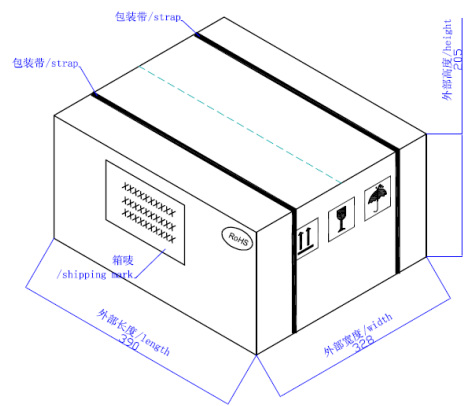
吸塑盒尺寸/blister size  
 每个吸塑盒装24PCS电池  
 /24pcs battery per blister



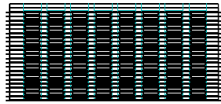
内箱尺寸/ Inner carton size



外箱尺寸/outer carton size



每个内箱装15盒+最上面1空盒(即每个内箱装360PCS)  
 /15 blisters per inner carton,  
 ( 360pcs/inner carton)



备注: 每个外箱套一个内箱, (共360PCS电池); 外箱表面需贴箱唛(箱唛贴于正中央), 并打好包装带/ Remark: 1 inner carton/outer carton(total 360pcs battery), shipping mark should be stuck on outer carton(in the front middle location), and with strap.

The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:

- Keep small cells and batteries which are considered swallowable out of the reach of children.
- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion.
- In case of ingestion of a cell or battery, seek medical assistance promptly.

--- End of Attachment 3 ---

**Attachment 4 Product specification**

**Specification of Pack**

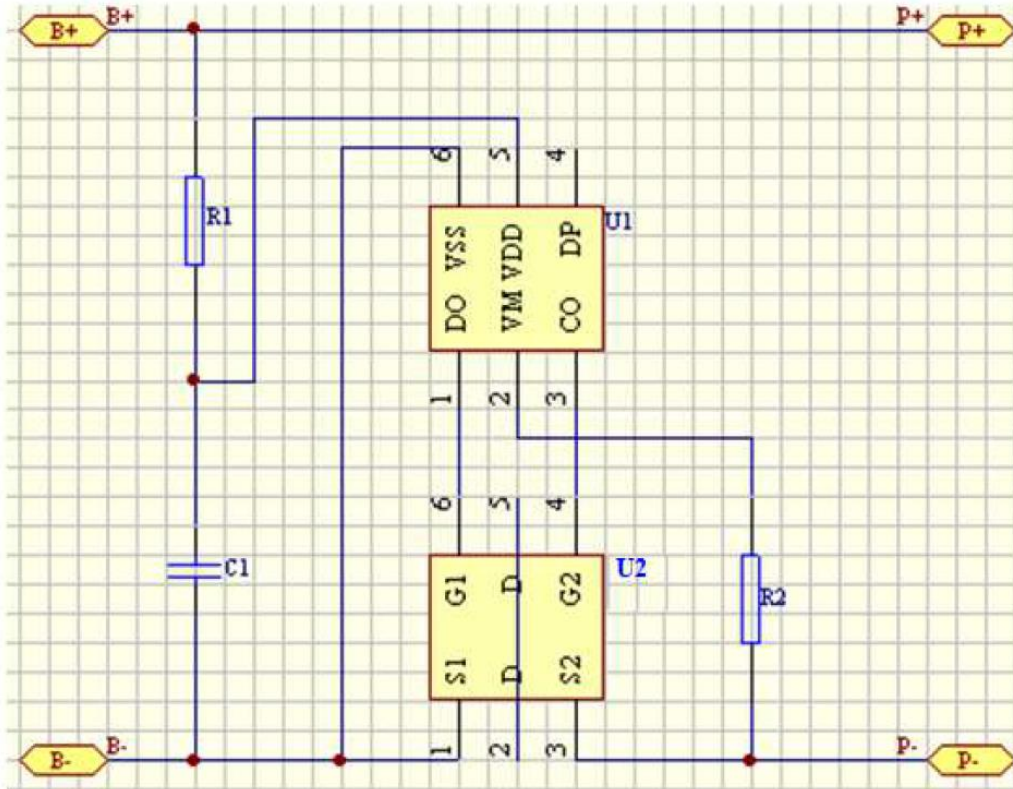
4.1.	标称容量 Nominal Capacity	1000mAh @0.2C (Rated)	
4.3.	标称电压 Nominal Voltage	3.7V	
4.4.	充电截止电压 Charge Cutoff Voltage	4.20±0.05V	
4.5.	充电电流 Charge Current	电芯表面温度 Cell surface temperature	充电电流 Charge current
		10~25℃	475mA Max
		25~45℃	950mA Max
4.7.	放电截止电压 Discharge Cutoff Voltage	3.00±0.05V	

**Specification of Cell**

4.1.	标称容量 Nominal Capacity	1000mAh @0.2C (Rated)	
4.3.	标称电压 Nominal Voltage	3.7V	
4.4.	充电截止电压 Charge Cutoff Voltage	4.20±0.05V	
4.5.	充电电流 Charge Current	电芯表面温度 Cell surface temperature	充电电流 Charge current
		10~25℃	475mA Max
		25~45℃	950mA Max
4.7.	放电截止电压 Discharge Cutoff Voltage	3.00±0.05V	

Attachment 4 Product specification

Circuit diagram



--- End of Attachment 4 ---

Attachment 5 ISO 9001 certificate



# QUALITY MANAGEMENT SYSTEM CERTIFICATE

This is to Certify that the QUALITY MANAGEMENT SYSTEM of  
**INTELLECT PIONEERING BATTERY  
TECHNOLOGY CO., LTD.**

**Registered Address:** No. 30, Xinghua Road East, Ronggui Xinghua Industrial Zone, Shunde District, Foshan City, Guangdong, P.R.China

**Audit Address:** No. 30, Xinghua Road East, Ronggui Xinghua Industrial Zone, Shunde District, Foshan City, Guangdong, P.R.China

has been assessed by DCI Certification Service and found to comply with

## GB/T 19001-2016 idt ISO9001:2015

for the  
Design, manufacture and sales of lithium-ion polymer batteries

**Certificate Number:** 115010  
**Unified Social Credit Code:** 914406066682221X0  
**Initial Certification Date:** 23 Feb. 2011

**Surveillance Audit Pass Label:**



Certification Manager



Please scan the QR code above by WeChat to check certificate validity.

**Certificate Issue Date:** 15 Dec. 2021

**Certificate Expiry Date:** 22 Feb. 2023

This certificate is issued by DCI Certification Ltd, The certificate holder shall perform the supervision and audit in accordance with the certification and accreditation rules and the certification contract, and affix a surveillance audit pass label to maintain the validity of certificate. To verify the validity of certificate, please visit our website ([www.dci-global.com.cn](http://www.dci-global.com.cn)) or scan the QR code above by WeChat, or visit the CNCA website. ([www.cnca.gov.cn](http://www.cnca.gov.cn)).

### DCI Certification Ltd