



# TEST REPORT

Report No.: CCI211200194EN

Report Date: Dec. 22, 2021

Page 1 of 3

**Applicant :**

**Address :**

(The Submitted Sample Said To Be)

**Sample Name :** Li-ion Battery

**Model/Item No. :** 18650/1800mAh

**Test Period :** From Dec. 20, 2021 to Dec. 22, 2021

**Tests conducted :** As requested by the applicant, for details refer to attached page(s).

## Executive Summary:

| No. | TESTED SAMPLE                             | STANDARD  | CONCLUSION |
|-----|---|---|------------|
| 1   | Tested material(s) of submitted sample(s) | European Directive 2013/56/EU & Amendment of 2006/66/EC Heavy Metals Content in Batteries and Accumulators and Waste Batteries and Accumulators<br>- Lead, Cadmium, Mercury content | PASS       |

Signed for and on behalf of  
Compliance Control Institute (Guangzhou) Co., Ltd.

Approved by: \_\_\_\_\_

Pascal SHI/Technical Director

Compliance Control Institute (Guangzhou) Co., Ltd.

7F, Building 2, Zheming Science & Technology Innovation Park, No. 89,  
Majun Street, Dongyong Town, Nansha District, Guangzhou City,  
Guangdong Province, China  
Tel: +86-20-84900678 Fax: +86-20-84910993  
Email: cs@ccilab.com.cn Website: www.ccilab.com.cn

This report is governed by, and incorporates by reference, the General Terms and Conditions of Testing which could be obtained / consulted by request to CCI or via the webpage of Conditions of Testing in the official website: www.ccilab.com.cn. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. This report sets forth our findings solely respect to the client's request(s) and the test results are obtained just with the submitted sample identified herein. The test results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. This report can not be reproduced except in full, without prior written permission of CCI. Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful, and any offenders may be prosecuted to the fullest extent of the law.



# TEST REPORT

Report No.: CCI211200194EN

Report Date: Dec. 22, 2021

Page 2 of 3

## TESTS CONDUCTED:

### Lead, Cadmium, Mercury content

Test Method: with reference to IEC62321-4:2013+A1:2017, IEC 62321-5:2013, was analyzed by Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES).

| Substances    | Pb             | Cd   | Hg   | Conclusion |
|---------------|----------------|------|------|------------|
| Limit (mg/kg) | 40             | 20   | 5    |            |
| RL (mg/kg)    | 10             | 2    | 2    |            |
| Material No.  | Result (mg/kg) |      |      |            |
| 1             | N.D.           | N.D. | N.D. | PASS       |

#### Note:

1. mg/kg = milligram per kilogram (ppm).
2. RL = report limit.
3. N.D.=not detected(or less than RL).
4. The test results shown of Cadmium, Mercury and Lead Content are of total weight of the battery sample
5. Batteries, accumulators and button cells containing more than 0.0005% mercury, more than 0.002% cadmium or more than 0.004% lead, shall be marked with the chemical symbol for the metal concerned: Hg, Cd or Pb. The symbol indicating the heavy metal content shall be printed beneath the symbol shown in Annex II and shall cover an area of at least one quarter the size of that symbol

### Test Material List

| Material No. | Description     |
|--------------|-----------------|
| 1            | Battery (whole) |



# TEST REPORT

Report No.: CCI211200194EN

Report Date: Dec. 22, 2021

Page 3 of 3

## Photo Appendix



★★★★★End of Report★★★★★

**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.....: LP21120022C01-01

Date of issue .....: 2022-01-04

Total number of pages .....: 24 pages

Name of Testing Laboratory preparing the Report .....: Dongguan Lepont Testing Service Co., Ltd.

Applicant's name.....:

Address.....:

**Test specification:**

Standard .....: IEC 62133-2:2017

Test procedure.....: Test Report

Non-standard test method .....: N/A

Test Report Form No.....: IEC62133\_2A

Test Report Form(s) Originator ..: DEKRA

Master TRF.....: Dated 2017-08-10

**Copyright © 2017 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System). All rights reserved.**



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.

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

The test results presented in this report relate only to the object tested.



This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

|   |  |   |
|---|--|---|
| <b>Test item description</b> .....  | Li-ion Battery   |   |
| <b>Trade Mark</b> .....   | N/A  |   |
| <b>Manufacturer</b> .....   | Same as applicant  |   |
| <b>Model/Type reference</b> .....   | YTY-18650-3.7V-1800mAh-6.6Wh   |   |
| <b>Ratings</b> .....  | 3.7V, 1800mAh, 6.6Wh   |   |
| <b>Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):</b> |  |   |
| <b>Testing Laboratory:</b>  | Dongguan Lepont Testing Service Co., Ltd.  |   |
| <b>Testing location/ address</b> .....  | Building 1, No.65, Jiulong Road, Dongcheng Street, Dongguan, Guangdong, P.R. China |   |
| <b>Tested by (name, function, signature)</b> .....  | Karl Huang / Project Handler   |  |
| <b>Approved by (name, function, signature)</b> ...  | Steven Chen / Reviewer   |  |

|   |   |
|---|---|
| <b>List of Attachments (including a total number of pages in each attachment):</b><br>Enclosure (5 pages).  |   |
| <b>Summary of testing:</b>  |   |
| <p><b>Tests performed (name of test and test clause):</b></p> <ul style="list-style-type: none"> <li>cl.7.1 Charging procedure for test purposes (for Cells and Batteries);</li> <li>cl.7.2.1 Continuous charging at constant voltage (cells);</li> <li>cl.7.2.2 Case stress at high ambient temperature (batteries);</li> <li>cl.7.3.1 External short circuit (cells);</li> <li>cl.7.3.2 External short circuit (batteries);</li> <li>cl.7.3.3 Free fall (cells and batteries);</li> <li>cl.7.3.4 Thermal abuse (cells);</li> <li>cl.7.3.5 Crush (cells);</li> <li>cl.7.3.6 Over-charging of battery;</li> <li>cl.7.3.7 Forced discharge (cells);</li> <li>cl.7.3.8 Mechanical tests (batteries);</li> <li>cl.7.3.9 Design evaluation – Forced internal short circuit (cells).</li> <li>cl.8.2 Determination of small cells and batteries</li> </ul> <p>Tests are made with the number of cells and batteries specified in IEC 62133-2:2017 Table 1.</p> | <p><b>Testing location:</b></p> <p>Dongguan Lepont Testing Service Co., Ltd.<br/>Building 1, No.65, Jiulong Road, Dongcheng Street, Dongguan, Guangdong, P.R. China</p> |
| <b>Summary of compliance with National Differences (List of countries addressed):</b> N/A   |   |
| <input checked="" type="checkbox"/> <b>The product fulfils the requirements of _EN 62133-2: 2017_</b>   |   |

**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.

|  |                              |   |           |   |
|--|------------------------------|---|-----------|---|
| Li-ion Battery   | YTY-18650-3.7V-1800mAh-6.6Wh |  |           |   |
| 3.7V   | 1800mAh                      | 6.6Wh   | 1IMR19/66 |  |
| Red wire “+”   | Black wire “-”               | YYYYMMDD  |           |   |
| Caution:<br>Do not put the battery into a fire or apply direct heat to it;<br>Do not disassemble or modify;<br>Do not continue to use the battery after it is swelled; |                              |   |           |   |

**Remark:**

“YYYYMMDD” represents the date of manufacture.

“YYYY” represents of year;

“MM” means months;

“DD” represents day.

|  |   |
|--|---|
| <b>Test item particulars</b> ..... :   |   |
| <b>Classification of installation and use</b> .....  | Building-in for use in portable electronics   |
| <b>Supply Connection</b> .....   | DC Connector  |
| <b>Recommend charging method declared by the manufacturer</b> .....  | Charging the battery with 900mA constant current and 4.2V constant voltage until the current reduces to 36mA at ambient 20°C ± 5°C. |
| <b>Discharge current (0,2 It A)</b> .....  | 360mA   |
| <b>Specified final voltage</b> .....   | 2.75V   |
| <b>Upper limit charging voltage per cell</b> .....   | 4.25V   |
| <b>Maximum charging current</b> .....  | 5400mA  |
| <b>Charging temperature upper limit</b> .....  | 45°C  |
| <b>Charging temperature lower limit</b> .....  | 0°C   |
| <b>Polymer cell electrolyte type</b> .....   | <input type="checkbox"/> gel polymer <input type="checkbox"/> solid polymer <input checked="" 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> .....  | 2021-12-18  |
| <b>Date (s) of performance of tests</b> .....  | 2021-12-18 to 2021-12-28  |
| <b>General remarks:</b>  |   |
| <p>"(See Enclosure #)" refers to additional information appended to the report.<br/>         "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p> |   |
| <b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC60068-2-61:</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><br><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 applicant   |

**General product information and other remarks:**

This battery is constructed with a single Lithium-Polymer (LIP) rechargeable cell , and has overcharge, over-discharge, over current and short-circuits proof circuit.

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

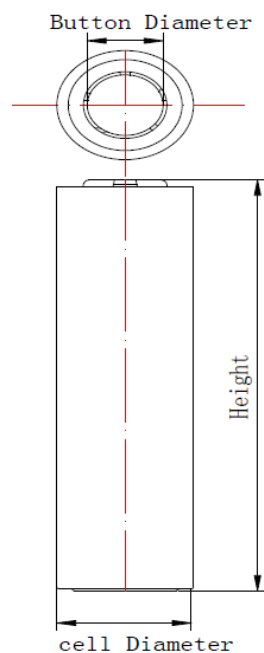
| Model                        | Nominal capacity | Nominal voltage | Nominal Charge Current | Nominal Discharge Current | Maximum Charge Current | Maximum Discharge Current | Maximum Charge Voltage | Final Voltage |
|------------------------------|------------------|-----------------|------------------------|---------------------------|------------------------|---------------------------|------------------------|---------------|
| YTY-18650-3.7V-1800mAh-6.6Wh | 1800mAh          | 3.7V            | 900mA                  | 900mA                     | 5400mA                 | 7000mA                    | 4.2V                   | 2.75V         |

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

| Model    | Nominal capacity | Nominal voltage | Nominal Charge Current | Nominal Discharge Current | Maximum Charge Current | Maximum Discharge Current | Maximum Charge Voltage | Final Voltage |
|----------|------------------|-----------------|------------------------|---------------------------|------------------------|---------------------------|------------------------|---------------|
| IMR18650 | 1800mAh          | 3.7V            | 900mA                  | 900mA                     | 5400mA                 | 7000mA                    | 4.2V                   | 2.75V         |

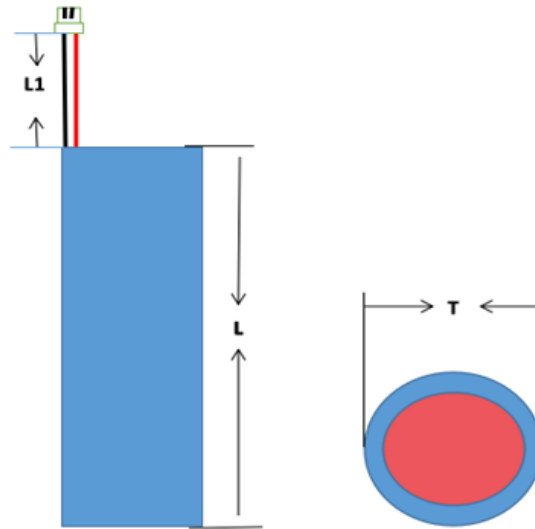
The main features of the cell in the battery are shown as below (clause 7.1.2):

| Model    | Upper limit charge voltage | Taper-off current | Lower charge temperature | Upper charge temperature |
|----------|----------------------------|-------------------|--------------------------|--------------------------|
| IMR18650 | 4.25V                      | 90mA              | 0°C                      | 45°C                     |

**Construction**


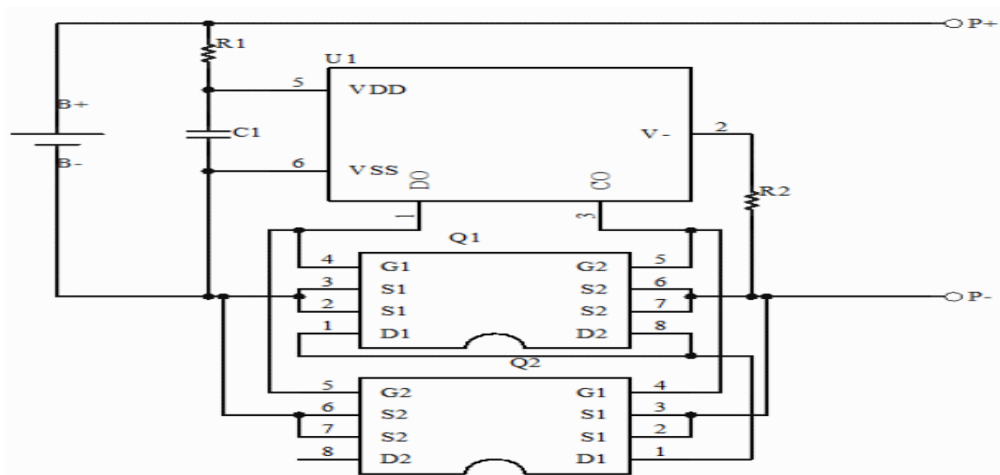
D(Max.): H(Max.)=18.54mm: 65.5mm  
Cell (Unit: mm)





D(Max.): H(Max)=19.0mm: 66.5mm  
Battery (Unit: mm)

Circuit diagram:



| IEC 62133-2 |  |   |          |
|-------------|--|---|----------|
| Clause      | Requirement + Test   | Result - Remark   | Verdict  |
| <b>4</b>    | <b>PARAMETER MEASUREMENT TOLERANCES</b>  |   | <b>P</b> |
|             | Parameter measurement tolerances   |   | P        |
| <b>5</b>    | <b>GENERAL SAFETY CONSIDERATIONS</b>   |   | <b>P</b> |
| <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 metal surface exists.  | N/A      |
|             | Insulation resistance (MΩ) ..... :   | N/A   | —        |
|             | 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            | Venting mechanism exists on the top of cylindrical 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  | Overcharge, over discharge, over current and short-circuit proof circuit used in this battery. See tests of clause 7. | P        |
|             | Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer   |   | P        |
|             | Batteries are provided with specifications and charging instructions for equipment manufacturers so that specified chargers are designed to maintain charging within the temperature, voltage and current limits specified | The charging limits specified in the manufacturer's specification.  | 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   | DC connector complied with the requirements.  | 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  | Protective circuit equipped on battery.   | P       |
|             | This protection may be provided external to the battery such as within the charger or the end devices  |   | N/A     |
|             | If protection is external to the battery, the manufacturer of the battery provide this safety relevant information to the external device manufacturer for implementation  |   | N/A     |
|             | If there is more than one battery housed in a single battery case, each battery have protective circuitry that can maintain the cells within their operating regions   | Single cell battery.  | 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                             | No such designed.   | N/A     |
|             | Protective circuit components added as appropriate and consideration given to the end-device application   |   | P       |
|             | The manufacturer of the battery provide a safety analysis of the battery safety circuitry with a test report including a fault analysis of the protection circuit under both charging and discharging conditions confirming the compliance |   | P       |
| 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, Max. charging voltage: 4.25V, not exceed 4.25V specified by manufacturer in Table 2. | 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 |   | N/A     |
|             | For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that charging is stopped when the upper limit of the charging voltage is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks                |   | N/A     |
|             | For batteries consisting of series-connected cells or cell blocks, nominal charge voltage not be counted as an overcharge protection   |   | N/A     |
|             | For batteries consisting of series-connected cells or cell blocks, cells have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer  |   | N/A     |
|             | It is recommended that the cells and cell blocks not discharged beyond the cell manufacturer's specified final voltage   | Final voltage of battery: 2.75V, not exceed the final voltage specified by cell manufacturer. | P       |
|             | For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry incorporated into the battery management system  |   | N/A     |
| 5.6.3       | Mechanical protection for cells and components of batteries  |   | P       |
|             | Mechanical protection for cells, cell connections and control circuits within the battery provided to prevent damage as a result of intended use and reasonably foreseeable misuse   | Mechanical protection for cell connections and control circuits provided.                     | P       |
|             | The mechanical protection can be provided by the battery case or it can be provided by the end product enclosure for those batteries intended for building into an end product   | Build-in batteries, mechanical protection for cells should be provided by end product.        | N/A     |
|             | The battery case and compartments housing cells designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer  | To be evaluated in final system.  | N/A     |
|             | For batteries intended for building into a portable end product, testing with the battery installed within the end product considered when conducting mechanical tests   |   | N/A     |
| 5.7         | <b>Quality plan</b>  |   | N/A     |

| 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 |                 | N/A     |
| <b>5.8</b>  | <b>Battery safety components</b>  |                 | N/A     |
|             | According annex F   |                 | N/A     |

| <b>6</b> | <b>TYPE TEST AND SAMPLE SIZE</b>   |                   | <b>P</b> |
|----------|--|-------------------|----------|
|          | Tests are made with the number of cells or batteries specified in Table 1 using cells or batteries that are not more than six months old   |                   | P        |
|          | Coin cells with resistance $\leq 3 \Omega$ (measured according annex D) are tested according table 1   | Not coin cells    | N/A      |
|          | Unless otherwise specified, tests are carried out in an ambient temperature of $20 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$  |                   | 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 | See clause 7.3.2. | P        |

| <b>7</b>   | <b>SPECIFIC REQUIREMENTS AND TESTS</b>  |             | <b>P</b> |
|------------|---|-------------|----------|
| <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 | See page 6. | 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   | See page 5. | P        |
| 7.1.2      | Second procedure  |             | P        |
|            | This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9  |             | P        |

| IEC 62133-2 |  |   |         |
|-------------|--|---|---------|
| Clause      | Requirement + Test   | Result - Remark   | Verdict |
|             | After stabilization for 1 h and 4 h, respectively, at ambient temperature of highest test temperature and lowest test temperature, as specified in Table 2, cells are charged by using the upper limit charging voltage and maximum charging current, until the charging current is reduced to 0,05 It A, using a constant voltage charging method | Charge temperature 0-45°C declared.<br>45°C used for upper limit tests temperature,<br>-5°C used for lower limit tests temperature. | 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)  | Tested as client requested.   | P       |
|             | Oven temperature (°C).....   | 70  | —       |
|             | Results: No physical distortion of the battery case resulting in exposure of internal protective components and cells  |   | P       |
| <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   |   | 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 conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test   |   | P       |
|             | A single fault applies to protective component parts such as MOSFET, fuse, thermostat or positive temperature coefficient (PTC) thermistor   | A single fault applies on MOSFET Q1.  | P       |
|             | Results: No fire. No explosion .....   | (See appended table 7.3.2)  | P       |

| IEC 62133-2 |  |                 |         |
|-------------|--|-----------------|---------|
| Clause      | Requirement + Test   | Result - Remark | Verdict |
| 7.3.3       | Free fall  |                 | P       |
|             | Results: No fire. No explosion   |                 | P       |
| 7.3.4       | Thermal abuse (cells)  |                 | P       |
|             | Oven temperature (°C).....: 130  |                 | —       |
|             | 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  | 5.95V applied   | P       |
|             | - 1,2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and   | 1S1P            | 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   |                 | N/A     |
|             | - Returned to ambient  |                 | P       |
|             | 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     |
|             | 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       |

| IEC 62133-2 |   |                                   |         |
|-------------|---|-----------------------------------|---------|
| Clause      | Requirement + Test  | Result - Remark                   | Verdict |
|             | 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)                                     |                                   | P       |
|             | The cells complied with national requirement for ..... :                                      | France, Japan, Korea, Switzerland | —       |
|             | The pressing was stopped upon:  |                                   | P       |
|             | - A voltage drop of 50 mV has been detected; or   |                                   | N/A     |
|             | - The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached | 800N for cylindrical cell.        | P       |
|             | Results: No fire ..... :  | (See appended table 7.3.9)        | P       |

|            |   |  |          |
|------------|---|--|----------|
| <b>8</b>   | <b>INFORMATION FOR SAFETY</b>   |  | <b>P</b> |
| <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                                      | Information for safety mentioned in manufacturer's specifications. | P        |
|            | Manufacturers of batteries ensure that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards | Information for safety mentioned in manufacturer's specifications. | P        |
|            | Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product                     |  | N/A      |
|            | 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>  |  | 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      |



| IEC 62133-2 |   |   |            |
|-------------|---|---|------------|
| Clause      | Requirement + Test  | Result - Remark   | Verdict    |
| <b>9</b>    | <b>MARKING</b>  |   | <b>P</b>   |
| <b>9.1</b>  | <b>Cell marking</b>   | The final product is battery.   | N/A        |
|             | Cells marked as specified in IEC 61960, except coin cells   |   | N/A        |
|             | Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity  |   | N/A        |
|             | By agreement between the cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked   |   | N/A        |
| <b>9.2</b>  | <b>Battery marking</b>  |   | <b>P</b>   |
|             | Batteries marked as specified in IEC 61960, except for coin batteries   | See marking plate on page 4.  | <b>P</b>   |
|             | Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity. Batteries also marked with an appropriate caution statement               |   | N/A        |
|             | Terminals have clear polarity marking on the external surface of the battery  | Red wire "+" Black wire "-" polarity explicitly marked on marking plated. | <b>P</b>   |
|             | 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 |   | <b>P</b>   |
| <b>9.3</b>  | <b>Caution for ingestion of small cells and batteries</b>   | Not small batteries.  | N/A        |
|             | Coin cells and batteries identified as small batteries according to 8.2 include a caution statement regarding the hazards of ingestion in accordance with 8.2   |   | N/A        |
|             | When small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion given on the immediate package  | Not intended for direct sale.   | N/A        |
| <b>9.4</b>  | <b>Other information</b>  |   | <b>P</b>   |
|             | Storage and disposal instructions   | Information mentioned in manufacturer's specifications.                   | <b>P</b>   |
|             | Recommended charging instructions   | Information mentioned in manufacturer's specifications.                   | <b>P</b>   |
| <b>10</b>   | <b>PACKAGING AND TRANSPORT</b>  |   | <b>N/A</b> |
|             | Packaging for coin cells not small enough to fit within the limits of the ingestion gauge of Figure 3   |   | N/A        |

| IEC 62133-2 |   |                 |         |
|-------------|---|-----------------|---------|
| Clause      | Requirement + Test  | Result - Remark | Verdict |
|             | 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 |                 | N/A     |

| <b>ANNEX A</b> | <b>CHARGING AND DISCHARGING RANGE OF SECONDARY LITHIUM ION CELLS FOR SAFE USE</b>       |  | <b>P</b> |
|----------------|---|--|----------|
| <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  | 4.25V  | P        |
| A.3.2.1        | General   |  | P        |
| A.3.2.2        | Explanation of safety viewpoint   |  | N/A      |
| A.3.2.3        | Safety requirements, when different upper limit charging voltage is applied             |  | 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   | See A.4.2.2.   | P        |
| A.4.2.1        | General   |  | P        |
| A.4.2.2        | Safety consideration when a different recommended temperature range is applied          | Charging temperature declared by client is: 0-45°C   | P        |
| 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      |
| A.4.3.4        | Safety considerations when specifying a new upper limit in the high temperature range   |  | N/A      |
| A.4.4          | Low temperature range   | Charging low temperature declared by client is: 0°C.   | P        |
| A.4.4.1        | General   |  | P        |
| A.4.4.2        | Explanation of safety viewpoint   |  | P        |
| A.4.4.3        | Safety considerations, when specifying charging conditions in the low temperature range |  | P        |
| A.4.4.4        | Safety considerations when specifying a new lower limit in the low temperature range    | No documents provided by manufacturer explaining the lower limit exceed 10°C, -5°C applied for testing in this report for safety considerations. | P        |

| IEC 62133-2    |   |                 |            |
|----------------|---|-----------------|------------|
| Clause         | Requirement + Test  | Result - Remark | Verdict    |
| 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>   |                 | P          |
| A.5.1          | General   |                 | P          |
| A.5.2          | Insertion procedure for nickel particle to generate internal short                            |                 | P          |
| A.5.3          | Disassembly of charged cell   |                 | P          |
| A.5.4          | Shape of nickel particle  |                 | P          |
| A.5.5          | Insertion of nickel particle in cylindrical cell  |                 | P          |
| A.5.5.1        | Insertion of nickel particle in winding core  |                 | P          |
| A.5.5.2        | Marking the position of the nickel particle on both ends of the winding core of the separator |                 | P          |
| A.5.6          | Insertion of nickel particle in prismatic cell  |                 | N/A        |
| <b>A.6</b>     | <b>Experimental procedure of the forced internal short-circuit test</b>                       |                 | P          |
| A.6.1          | Material and tools for preparation of nickel particle   |                 | P          |
| A.6.2          | Example of a nickel particle preparation procedure  |                 | P          |
| A.6.3          | Positioning (or placement) of a nickel particle   |                 | P          |
| A.6.4          | Damaged separator precaution  |                 | P          |
| A.6.5          | Caution for rewinding separator and electrode   |                 | P          |
| A.6.6          | Insulation film for preventing short-circuit  |                 | P          |
| A.6.7          | Caution when disassembling a cell   |                 | P          |
| A.6.8          | Protective equipment for safety   |                 | P          |
| A.6.9          | Caution in the case of fire during disassembling  |                 | P          |
| A.6.10         | Caution for the disassembling process and pressing the electrode core                         |                 | P          |
| A.6.11         | Recommended specifications for the pressing device  |                 | P          |
| <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> |

| IEC 62133-2    |  |                          |            |
|----------------|--|--------------------------|------------|
| Clause         | Requirement + Test   | Result - Remark          | Verdict    |
| <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>   |                          | N/A        |
| <b>D.2</b>     | <b>Method</b>  |                          | N/A        |
|                | A sample size of three coin cells is required for this measurement..... :  | (See appended table D.2) | N/A        |
|                | Coin cells with an internal resistance of less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1 |                          | N/A        |
|                | Coin cells with an internal resistance greater than 3 Ω require no further testing   |                          | N/A        |
| <b>ANNEX E</b> | <b>PACKAGING AND TRANSPORT</b>   |                          | <b>N/A</b> |
| <b>ANNEX F</b> | <b>COMPONENT STANDARDS REFERENCES</b>  |                          | <b>N/A</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                                   |   | IMR18650         | 3.6V, 1800mAh  | IEC 62133-2: 2017 | Test with appliance                 |   |
| -Electrolyte                           | Shandong Hairong Power Material Co., Ltd                | HR-8945F         | LiPF <sub>6</sub> +EC+DEC  | --                | --                                  |   |
| -Separator                             | Henan Huiqiang New Energy Materials Technology Co., Ltd | 22um             | PP, Shutdown temperature: 130°C  | --                | --                                  |   |
| -Positive electrode                    | Xinxiang Hongli Power Technology Co., Ltd               | HL02             | LiMn <sub>2</sub> O <sub>4</sub>   | --                | --                                  |   |
| -Negative electrode                    | Henan Jiaozuo rongchuang graphite Technology Co., Ltd   | YJ-001A          | Graphite   | --                | --                                  |   |
| PCB                                    | Shenzhen haoxingsheng Electronic Technology Co., Ltd    | XBL-3.7V-4MOS-WK | FR-4, 130°C  | --                | --                                  |   |
| IC(U1)                                 | Shenzhen Zhuolang Microelectronics Co., Ltd             | ZLDW01A          | Overcharge detection voltage: 4.280V±0.050V, Overdischarge detection voltage: 2.400V±0.100V, Discharge overcurrent detection voltage: 0.150V±0.020V, T <sub>OP</sub> : -40°C to 85°C | --                | --                                  |   |
| MOSFET (Q1, Q2)                        | Shenzhen Zhuolang Microelectronics Co., Ltd             | PT8205           | V <sub>DS</sub> : 20V, V <sub>GS</sub> :±12V, I <sub>D</sub> : 6A, T <sub>J</sub> , T <sub>stg</sub> : -55°C to 150°C  | --                | --                                  |   |
| Lead Wire                              | HEYUAN YONGJIA INDUSTRY CO LTD                          | 1007             | 22AWG, 300V, 80°C  | UL 758            | UL E336942                          |   |

| IEC 62133-2  |                    |                 |                   |                 |             |
|--|--------------------|-----------------|-------------------|-----------------|-------------|
| Clause   | Requirement + Test |                 |                   | Result - Remark | Verdict     |
| Lead Wire (Alternative)  | Interchangeable    | Interchangeable | 22AWG, 300V, 80°C | UL 758          | UL Approved |
| Supplementary information:<br><sup>1)</sup> 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 Vc (Vdc)                  | Recommended charging current I <sub>rec</sub> (A) | OCV before test (Vdc) | Results |   |
| LP21120022C01-B001  | 4.2  | 0.9   | 4.130                 | P       |   |
| LP21120022C01-B002  | 4.2  | 0.9   | 4.136                 | P       |   |
| LP21120022C01-B003  | 4.2  | 0.9   | 4.125                 | P       |   |
| LP21120022C01-B004  | 4.2  | 0.9   | 4.136                 | P       |   |
| LP21120022C01-B005  | 4.2  | 0.9   | 4.133                 | P       |   |
| <b>Supplementary information:</b>                                   |  |   |                       |         |   |
| - No fire or explosion<br>- No leakage<br>- Others (please explain) |  |   |                       |         |   |

| 7.3.1   | TABLE: External short-circuit (cell) |                       |                            |                                      |         | P |
|---|--------------------------------------|-----------------------|----------------------------|--------------------------------------|---------|---|
| Sample no.  | Ambient T (°C)                       | OCV before test (Vdc) | Resistance of circuit (mΩ) | Maximum case temperature rise ΔT (K) | Results |   |
| <b>Samples charged at charging temperature upper limit (45°C)</b> |                                      |                       |                            |                                      |         |   |
| LP21120022C01-B006  | 55.2                                 | 4.141                 | 82                         | 154.1                                | P       |   |
| LP21120022C01-B007  | 55.2                                 | 4.141                 | 82                         | 147.5                                | P       |   |
| LP21120022C01-B008  | 55.2                                 | 4.153                 | 83                         | 121.4                                | P       |   |
| LP21120022C01-B009  | 55.2                                 | 4.148                 | 83                         | 147.7                                | P       |   |
| LP21120022C01-B010  | 55.2                                 | 4.137                 | 84                         | 121.7                                | P       |   |
| <b>Samples charged at charging temperature lower limit (-5°C)</b> |                                      |                       |                            |                                      |         |   |
| LP21120022C01-B011  | 55.1                                 | 4.085                 | 81                         | 129.4                                | P       |   |
| LP21120022C01-B012  | 55.1                                 | 4.077                 | 81                         | 137.6                                | P       |   |
| LP21120022C01-B013  | 55.1                                 | 4.087                 | 82                         | 148.6                                | P       |   |
| LP21120022C01-B014  | 55.1                                 | 4.090                 | 82                         | 139.3                                | P       |   |

| IEC 62133-2   |                    |       |    |                 |  |         |
|---|--------------------|-------|----|-----------------|--|---------|
| Clause  | Requirement + Test |       |    | Result - Remark |  | Verdict |
| LP21120022C01-B015                                  | 55.1               | 4.088 | 83 | 120.5           |  | P       |
| <b>Supplementary information:</b>                   |                    |       |    |                 |  |         |
| - No fire or explosion<br>- Others (please explain) |                    |       |    |                 |  |         |

| 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 $\Delta T$ (K) | Component single fault condition     | Results |
| LP21120022C01-B016                                  | 20.7                                    | 4.135                 | 82                         | 130.3  | Short circuit MOSFET (Q1, Pin3-Pin6) | P       |
| LP21120022C01-B017                                  | 17.7                                    | 4.134                 | 82                         | 129.7  | Short circuit MOSFET (Q1, Pin3-Pin6) | P       |
| LP21120022C01-B018                                  | 17.7                                    | 4.133                 | 81                         | 144.6  | Short circuit MOSFET (Q1, Pin3-Pin6) | P       |
| LP21120022C01-B019                                  | 20.7                                    | 4.133                 | 81                         | 21.2   | --                                   | P       |
| LP21120022C01-B020                                  | 20.7                                    | 4.123                 | 82                         | 21.4   | --                                   | P       |
| <b>Supplementary information:</b>                   |   |                       |                            |  |                                      |         |
| - No fire or explosion<br>- Others (please explain) |   |                       |                            |  |                                      |         |

| 7.3.5   | TABLE: Crush (cells)  |  |   | P       |
|---|-----------------------|--|---|---------|
| Sample no.  | OCV before test (Vdc) | OCV at removal of crushing force (Vdc) | Maximum force applied to the cell during crush (kN) | Results |
| <b>Samples charged at charging temperature upper limit (45°C)</b> |                       |  |   |         |
| LP21120022C01-B037  | 4.142                 | 4.142                                  | 13.04   | P       |
| LP21120022C01-B038  | 4.146                 | 4.415                                  | 13.04   | P       |
| LP21120022C01-B039  | 4.130                 | 4.129                                  | 13.03   | P       |
| LP21120022C01-B040  | 4.137                 | 4.137                                  | 13.03   | P       |
| LP21120022C01-B041  | 4.142                 | 4.142                                  | 13.04   | P       |



| IEC 62133-2   |                    |                 |       |         |
|---|--------------------|-----------------|-------|---------|
| Clause  | Requirement + Test | Result - Remark |       | Verdict |
| <b>Samples charged at charging temperature lower limit (-5°C)</b>               |                    |                 |       |         |
| LP21120022C01-B042  | 4.084              | 4.084           | 13.04 | P       |
| LP21120022C01-B043  | 4.078              | 4.078           | 13.04 | P       |
| LP21120022C01-B044  | 4.078              | 4.078           | 13.03 | P       |
| LP21120022C01-B045  | 4.077              | 4.077           | 13.04 | P       |
| LP21120022C01-B046  | 4.087              | 4.087           | 13.04 | P       |
| <b>Supplementary information:</b>   |                    |                 |       |         |
| - No fire or explosion<br>- Others (please explain)<br>All samples were leaked. |                    |                 |       |         |

| 7.3.6   | TABLE: Over-charging of battery |                              |                                     |         | P |
|---|---------------------------------|------------------------------|-------------------------------------|---------|---|
| Constant charging current (A) .....                 |                                 | 3.6                          |                                     | —       |   |
| Supply voltage (Vdc).....                           |                                 | 5.95                         |                                     | —       |   |
| Sample no.  | OCV before charging (Vdc)       | Total charging time (minute) | Maximum outer case temperature (°C) | Results |   |
| LP21120022C01-B047                                  | 3.266                           | 210                          | 37.2                                | P       |   |
| LP21120022C01-B048                                  | 3.357                           | 210                          | 42.7                                | P       |   |
| LP21120022C01-B049                                  | 3.394                           | 210                          | 39.8                                | P       |   |
| LP21120022C01-B050                                  | 3.404                           | 210                          | 38.5                                | P       |   |
| LP21120022C01-B051                                  | 3.410                           | 210                          | 39.7                                | P       |   |
| <b>Supplementary information:</b>                   |                                 |                              |                                     |         |   |
| - No fire or explosion<br>- Others (please explain) |                                 |                              |                                     |         |   |

| 7.3.7              | TABLE: Forced discharge (cells)                |                                   |                                     |         | P |
|--------------------|--|-----------------------------------|-------------------------------------|---------|---|
| Sample no.         | OCV before application of reverse charge (Vdc) | Measured reverse charge $I_t$ (A) | Lower limit discharge voltage (Vdc) | Results |   |
| LP21120022C01-B052 | 3.393  | 1.8                               | -2.75                               | P       |   |
| LP21120022C01-B053 | 3.408  | 1.8                               | -2.75                               | P       |   |

| IEC 62133-2   |                    |     |                 |         |
|---|--------------------|-----|-----------------|---------|
| Clause  | Requirement + Test |     | Result - Remark | Verdict |
| LP21120022C01-B054  | 3.408              | 1.8 | -2.75           | P       |
| LP21120022C01-B055  | 3.377              | 1.8 | -2.75           | P       |
| LP21120022C01-B056  | 3.366              | 1.8 | -2.75           | P       |
| <b>Supplementary information:</b>   |                    |     |                 |         |
| <ul style="list-style-type: none"> <li>- No fire or explosion</li> <li>- Others (please explain)</li> </ul> |                    |     |                 |         |

| 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 |   |
| LP21120022C01-B057  | 4.124                 | 4.124                | 44.972               | 44.969              | P       |   |
| LP21120022C01-B058  | 4.119                 | 4.118                | 44.596               | 44.596              | P       |   |
| LP21120022C01-B059  | 4.115                 | 4.114                | 44.811               | 44.810              | P       |   |
| <b>Supplementary information:</b>   |                       |                      |                      |                     |         |   |
| <ul style="list-style-type: none"> <li>- No fire or explosion</li> <li>- No rupture</li> <li>- No leakage</li> <li>- No venting</li> <li>- Others (please explain)</li> </ul> |                       |                      |                      |                     |         |   |

| 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 |   |
| LP21120022C01-B060  | 4.126                   | 4.126                | 44.634               | 44.634              | P       |   |
| LP21120022C01-B061  | 4.121                   | 4.121                | 44.586               | 44.586              | P       |   |
| LP21120022C01-B062  | 4.118                   | 4.118                | 42.010               | 42.010              | P       |   |
| <b>Supplementary information:</b>   |                         |                      |                      |                     |         |   |
| <ul style="list-style-type: none"> <li>- No fire or explosion</li> <li>- No rupture</li> <li>- No leakage</li> <li>- No venting</li> <li>- Others (please explain)</li> </ul> |                         |                      |                      |                     |         |   |

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

| 7.3.9  | TABLE: Forced internal short circuit (cells) |                       |                                 |                              |         | P |
|--|--|-----------------------|---------------------------------|------------------------------|---------|---|
| Sample no.   | Chamber ambient T (°C)                       | OCV before test (Vdc) | Particle location <sup>1)</sup> | Maximum applied pressure (N) | Results |   |
| <b>Samples charged at charging temperature upper limit (45°C)</b>  |  |                       |                                 |                              |         |   |
| LP21120022C0<br>1-B063   | 45   | 4.141                 | 1                               | 800                          | P       |   |
| LP21120022C0<br>1-B064   | 45   | 4.147                 | 1                               | 800                          | P       |   |
| LP21120022C0<br>1-B065   | 45   | 4.142                 | 1                               | 800                          | P       |   |
| LP21120022C0<br>1-B066   | 45   | 4.142                 | 2                               | 800                          | P       |   |
| LP21120022C0<br>1-B067   | 45   | 4.145                 | 2                               | 800                          | P       |   |
| <b>Samples charged at charging temperature lower limit (-5°C)</b>  |  |                       |                                 |                              |         |   |
| LP21120022C0<br>1-B068   | -5   | 4.101                 | 1                               | 800                          | P       |   |
| LP21120022C0<br>1-B069   | -5   | 4.114                 | 1                               | 800                          | P       |   |
| LP21120022C0<br>1-B070   | -5   | 4.090                 | 1                               | 800                          | P       |   |
| LP21120022C0<br>1-B071   | -5   | 4.092                 | 2                               | 800                          | P       |   |
| LP21120022C0<br>1-B072   | -5   | 4.101                 | 2                               | 800                          | P       |   |
| <b>Supplementary information:</b>  |  |                       |                                 |                              |         |   |
| <sup>1)</sup> Identify one of the following:<br>1: Nickel particle inserted between positive and negative (active material) coated area.<br>2: Nickel particle inserted between positive aluminium foil and negative active material coated area.<br><br>- No fire or explosion<br>- Others (please explain) |  |                       |                                 |                              |         |   |

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

## **ENCLOSURE**

| <b>Supplement ID</b> | <b>Description</b> |
|----------------------|--------------------|
| <b>01</b>            | <b>Photographs</b> |

### ID 01: Photographs

ID 01



Fig.1-Front view of the battery

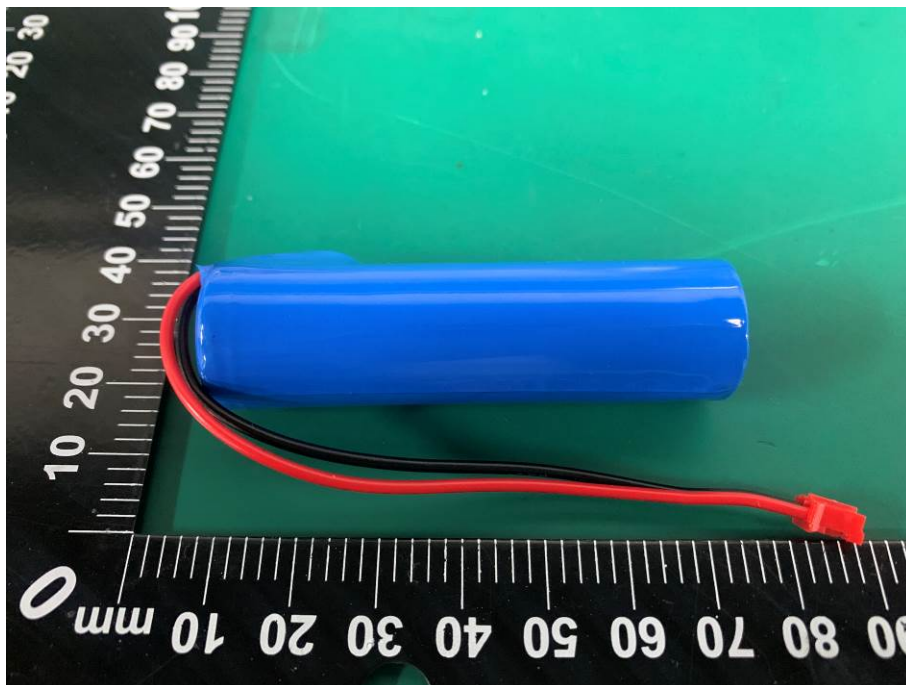


Fig.2-Rear view of the battery

ID 01

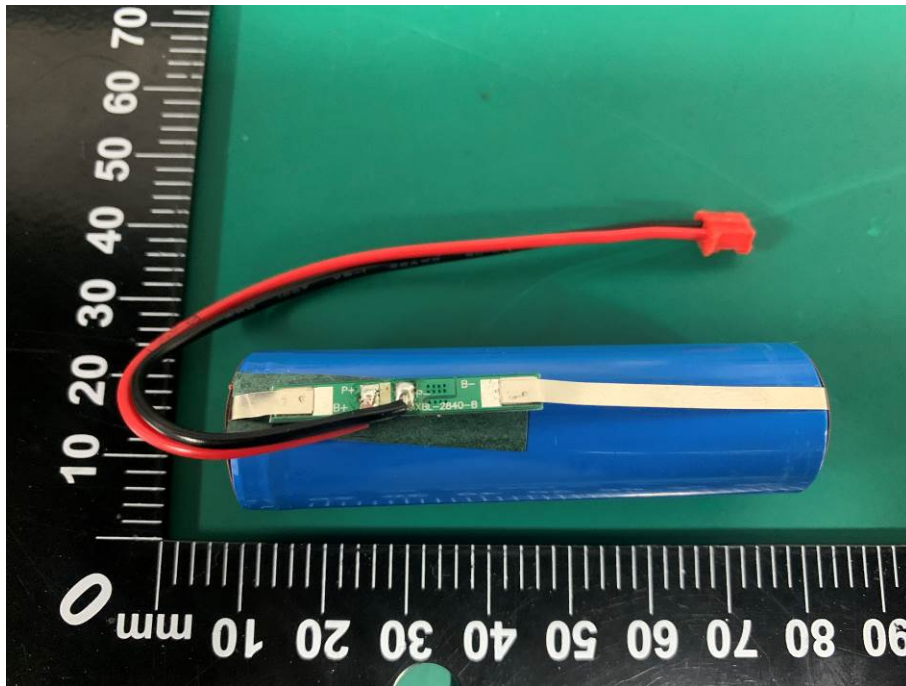


Fig.3-Inside view of the battery

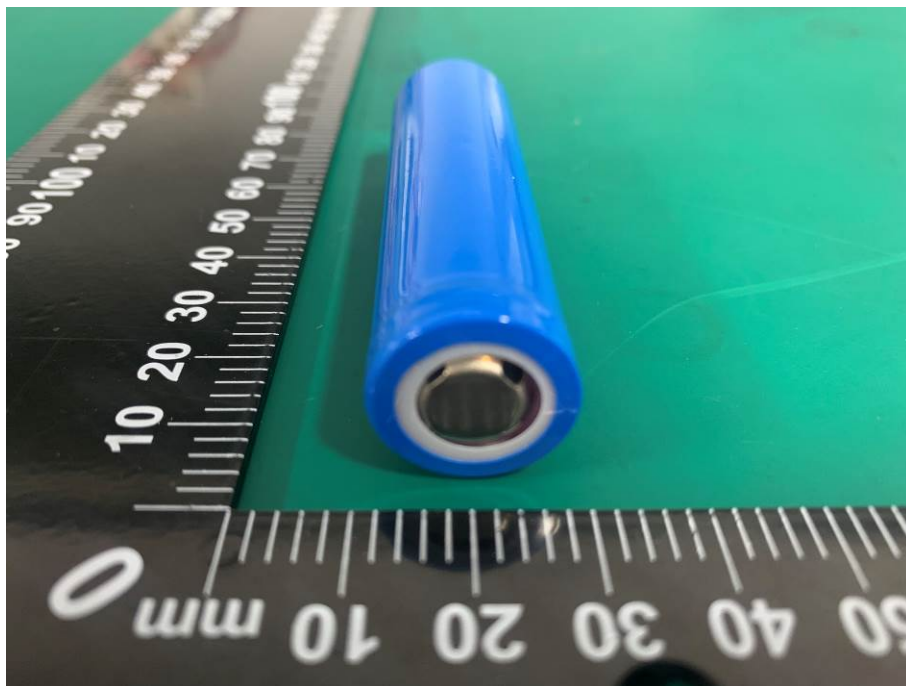


Fig.4-Top view of the cell

ID 01

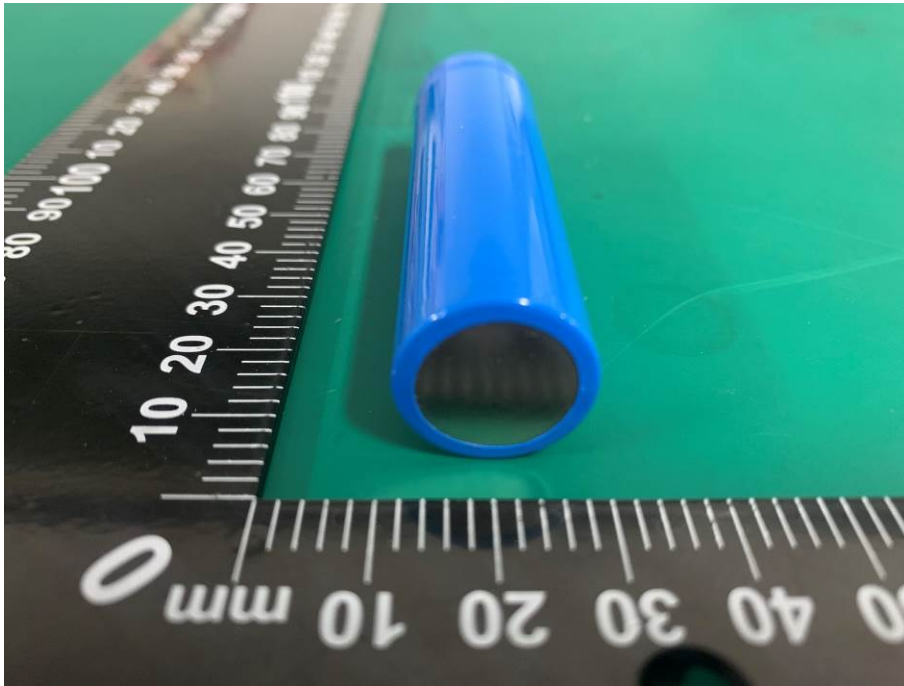


Fig.5-Bottom view of the cell

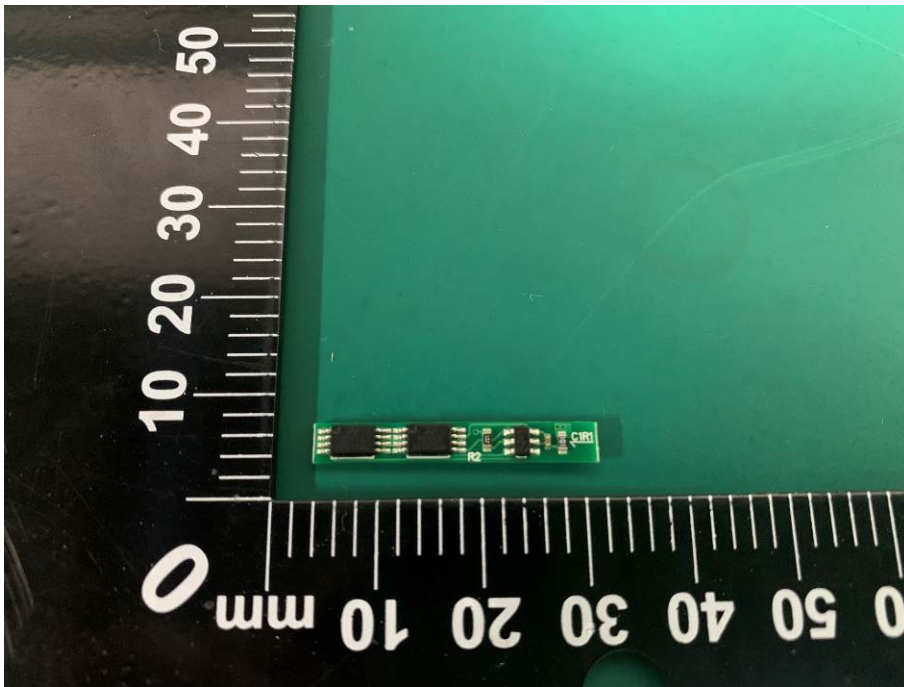


Fig.6-Front view of the PCM

ID 01

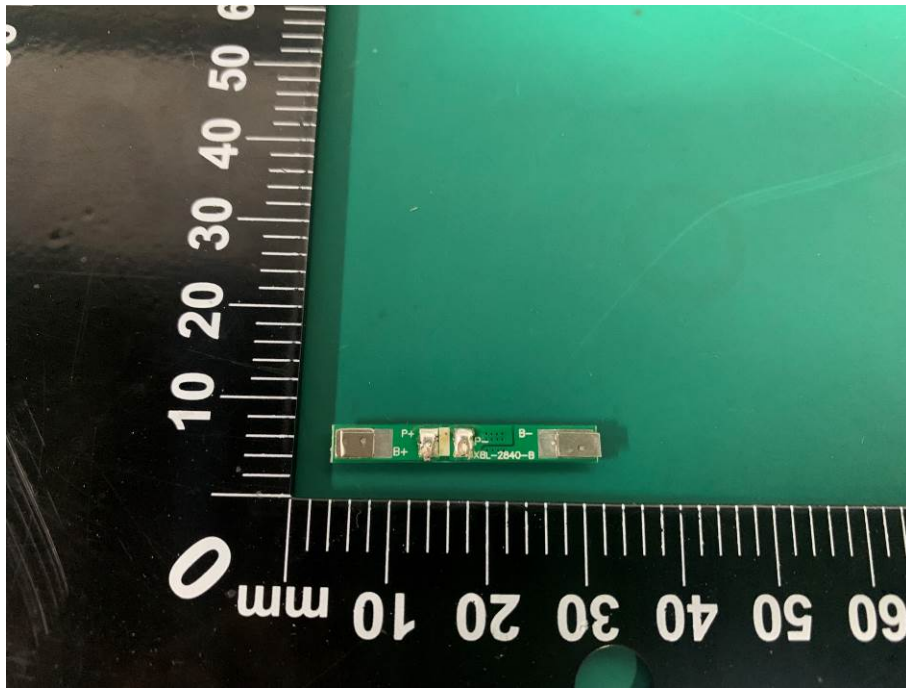


Fig.7-Rear view of the PCM

-End of ID 01-