Test Report

Applicant :

Address :

The following sample(s) and sample information was/were submitted and identified by/on behalf of the client

Sample Name	:	Battery
Sample Model	:	IMR18650-800mAh
Sample Received Date	:	Jan 14, 2025
Test Completed Date	:	Jan 17, 2025
Test Requested	:	As specified by client, with reference to Regulation EU 2023/1542 to determine Lead(Pb), Cadmium(Cd), Mercury(Hg) contents in the submitted sample.
Test Method	:	Refer to the next page(s).
Test Results	:	Refer to the next page(s).
Test Conclusion	:	Based upon the performed tests by submitted samples, the test results comply with the limits of the Regulation EU 2023/1542.

scan to check the report

HLF25001190EA

Authorized Signature:

Technology Manager

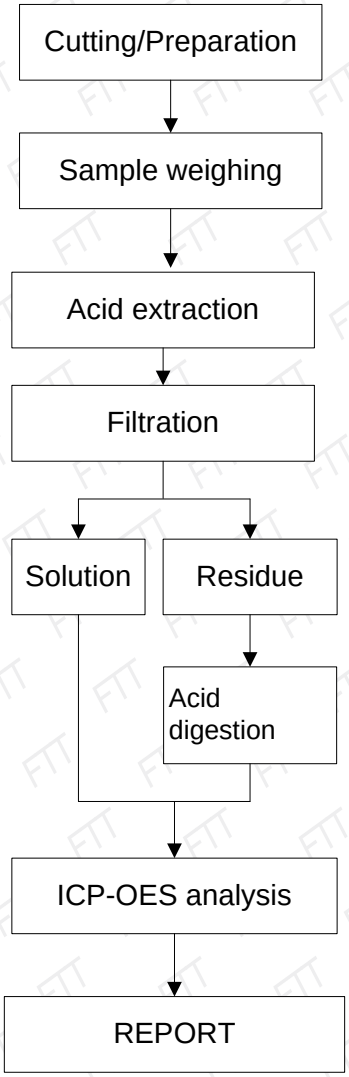
FLION TESTING TECHNOLOGIES
Add :Gangzi Industrial Park,Furong Industrial Area, Xinqiao Village, Shajing Town, Bao'an District, Shenzhen City
Tel : 86-0755-2724 8885 Fax : 86-0755-2746 0090 Http://www.cnftt.com

Test Results:

Test Item	Test method/Instrument	MDL (%)	Result (%)	Limit (%)
Lead(Pb)	EPA3050B&EPA3052/ICP-OES	0.0002	N.D.	0.01*
Cadmium(Cd)	EPA3050B&EPA3052/ICP-OES	0.0002	N.D.	0.002
Mercury(Hg)	EPA3050B&EPA3052/ICP-OES	0.0002	N.D.	0.0005

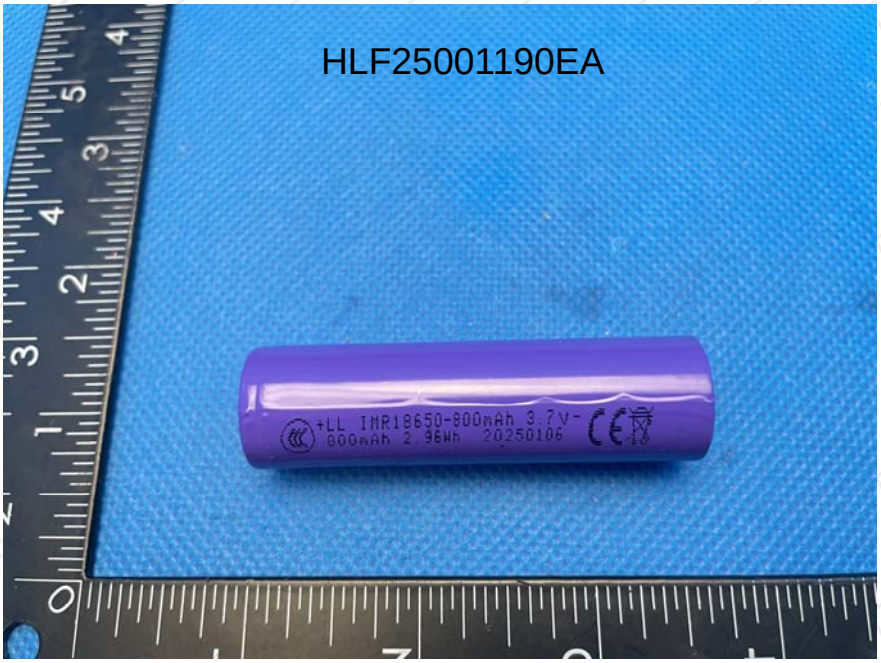
Note:
(1) 1 mg/kg = 1 ppm = 0.0001%
(2) N.D. = Not Detected (less than MDL)
(3) MDL = Method Detection Limit
(4) "--" = Not Regulated
(5) "*" According to the Regulation EU 2023/1542: 1.From 18 August 2024, portable batteries, whether or not incorporated into appliances,shall not contain more than 0.01 % of lead (expressed as lead metal) by weight. 2. The restriction set out in point 1 shall not apply to portable zinc-air button cells until 18 August 2028.
(6) According to the Article 13 (5) of Regulation EU 2023/1542, All batteries containing more than 0,002 % cadmium or more than 0,004 % lead, shall be marked with the chemical symbol for the metal concerned: Cd or Pb.
Remark: The test report is only used for customer research, teaching, internal quality control, product development and other purposes, for internal reference only.

Testing Flow Chart:



Test Part Description: Battery

Sample Photo



Note: The results shown in this report refer only to the sample(s) tested.

* * * * * End of Report * * * * *

Test Report issued under the responsibility of:

Total Quality. Assured.

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. ..... :	220623033SZN-001
Date of issue ..... :	09 Oct. 2022 Amendment 1: Apr. 03, 2025
Total number of pages ..... :	See page 3 for details
Name of Testing Laboratory preparing the Report ..... :	Intertek Testing Services Shenzhen Ltd. Longhua Branch
Applicant's name ..... :	
Address ..... :	
Test specification:	
Standard ..... :	IEC 62133-2:2017, IEC 62133-2:2017/AMD1:2021
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
TRF template used ..... :	IECEE OD-2020-F1:2021, Ed.1.4
Test Report Form No. ..... :	IEC62133_2C
Test Report Form(s) Originator .... :	DEKRA Certification B.V.
Master TRF ..... :	Dated 2022-07-01

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

Test item description ..... :	Li-ion Cell
Trade Mark(s)..... :	-
Manufacturer ..... :	Same as applicant
Model/Type reference ..... :	IMR18650-2000mAh, IMR18650-1800mAh, IMR18650-1500mAh, IMR18650-1300mAh, IMR18650-1200mAh, IMR18650-800mAh
Ratings ..... :	IMR18650-2000mAh: 3.7V, 2000mAh, 7.4Wh, IMR18650-1800mAh: 3.7V, 1800mAh, 6.66Wh, IMR18650-1500mAh: 3.7V, 1500mAh, 5.55Wh, IMR18650-1300mAh: 3.7V, 1300mAh, 4.81Wh, IMR18650-1200mAh: 3.7V. 1200mAh. 4.44Wh, IMR18650-800mAh: 3.7V, 800mAh, 2.96Wh

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

☒	**CB Testing Laboratory:**	Intertek Testing Services Shenzhen Ltd. Longhua Branch	
Testing location/ address.....:		No.101&201, Building B, No.308, Wuhe Avenue, Zhangkengjing, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China	
Tested by (name, function, signature).....:		Milo Mo / Engineer	Milo Mo
Approved by (name, function, signature)...:		Demain Liu / Reviewer	Demain Liu
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address.....:			
Tested by (name + signature) .....:			
Witnessed by (name, function, signature) .:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Witnessed by (name, function, signature) .:			
Approved by (name, function, signature)...:			
Supervised by (name, function, signature) :			

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

- Pages 1 to 30 for IEC 62133-2 TRF (main report)
- Appendix 1 (6 pages): Product photos
- Appendix 2 (3 pages): NATIONAL DIFFERENCES

Summary of testing:

Tests performed (name of test and test clause): Report No.: 220623033SZN-001	**Testing location:**
7.1 Charging procedures for test purposes (cells); 7.2.1 Continuous charging at constant voltage (cells); 7.3.1 External short-circuit (cells); 7.3.3 Free fall (cells); 7.3.4 Thermal abuse (cells); 7.3.5 Crush (cells); 7.3.7 Forced discharge (cells); 7.3.9 Design evaluation – Forced internal short-circuit (cells). 220623033SZN-001 Amendment1-no testing	Intertek Testing Services Shenzhen Ltd. Longhua Branch No.101&201, Building B, No.308, Wuhe Avenue, Zhangkengjing, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China

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

Republic of Korea

Due to there was no National Differences of EN 62133-2:2017/A1:2021 in the IEC website, so there was no additional National Differences of EN 62133-2:2017/A1:2021 in the test report.

☒ **The product fulfils the requirements of: IEC 62133-2:2017, IEC 62133-2:2017/AMD1:2021 and EN 62133-2:2017/A1:2021.**

Use of uncertainty of measurement for decisions on conformity (decision rule) :

☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty (“simple acceptance” decision rule, previously known as “accuracy method”).

☐ Other:… (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

Information on uncertainty of measurement:

The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.

IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

Copy of marking plate:

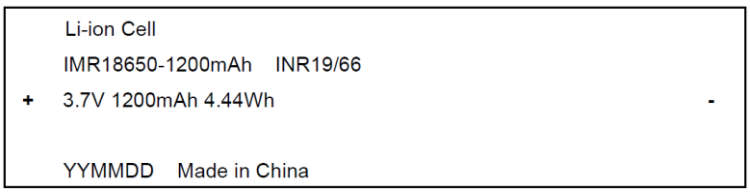
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Label 1 for model IMR18650-2000mAh

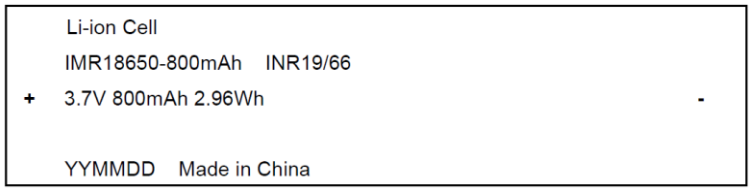
Label 2 for model IMR18650-1800mAh

Label 3 for model IMR18650-1500mAh

Label 4 for model IMR18650-1300mAh



Label 5 for model IMR18650-1200mAh



Label 6 for model IMR18650-800mAh

Remark: "YYMMDD" represent the production date.
YY= Year, MM= Month, DD= Day.

Test item particulars .....:	
Classification of installation and use .....:	To be defined in final product
Supply Connection.....:	Electrode plate
Recommend charging method declared by the manufacturer.....:	Charging the cell with 0.5C mA constant current and 4.2V constant voltage until the current reduces to 0.02C mA at ambient 20°C ± 5°C.
Discharge current (0,2 It A) .....:	IMR18650-2000mAh: 400mA, IMR18650-1800mAh: 360mA, IMR18650-1500mAh: 300mA, IMR18650-1300mAh: 260mA, IMR18650-1200mAh: 240mA, IMR18650-800mAh: 160mA
Specified final voltage.....:	2.75V
Upper limit charging voltage per cell.....:	4.2V
Maximum charging current.....:	0.5C
Charging temperature upper limit.....:	45°C
Charging temperature lower limit.....:	0°C
Polymer cell electrolyte type.....:	☐ gel polymer ☐ solid polymer ☒ N/A
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item .....:	Jun. 23, 2022 Amendment 1: NA
Date (s) of performance of tests.....:	Jun. 23, 2022 to Aug. 04, 2022 Amendment 1: NA

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.
Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

When determining the test conclusion, the Measurement Uncertainty of test has been considered.
This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program. The test report only allows to be revised only within the report defined retention period unless standard or regulation was withdrawn or invalid.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....:	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) ..... : Same as applicant

General product information and other remarks:

The cell consists of positive electrode plate, negative electrode plate, separator, electrolyte, case. The positive and negative electrode plates are housed in the case in the state being separated by the separator.

The models of IMR18650-2000mAh, IMR18650-1800mAh, IMR18650-1500mAh, IMR18650-1300mAh, IMR18650-1200mAh, IMR18650-800mAh are identical except the capacity and model name. The models IMR18650-2000mAh, IMR18650-1500mAh, IMR18650-1300mAh, IMR18650-1200mAh, IMR18650-800mAh are selected for testing in this report.

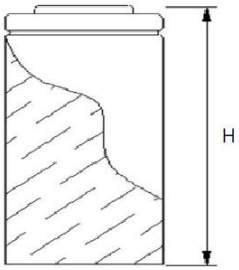
The main features of the cell are shown as below (clause 7.1.1):

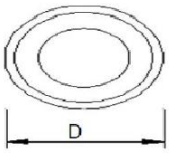
model	Nominal capacity	Nominal voltage	Nominal Charge Current	Nominal Discharge Current	Maximum Charge Current	Maximum Charge Voltage	Cut-off Voltage
IMR18650-2000mAh	2000mAh	3.7V	1000mA	1000mA	1000mA	4.2V	2.75V
IMR18650-1800mAh	1800mAh	3.7V	900mA	900mA	900mA	4.2V	2.75V
IMR18650-1500mAh	1500mAh	3.7V	750mA	750mA	750mA	4.2V	2.75V
IMR18650-1300mAh	1300mAh	3.7V	650mA	650mA	650mA	4.2V	2.75V
IMR18650-1200mAh	1200mAh	3.7V	600mA	600mA	600mA	4.2V	2.75V
IMR18650-800mAh	800mAh	3.7V	400mA	400mA	400mA	4.2V	2.75V

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

model	Taper-off current	Upper limit charge voltage	Lower charge temperature	Upper charge temperature
IMR18650-2000mAh	100mA	4.2V	0°C	45°C
IMR18650-1800mAh	90mA	4.2V	0°C	45°C
IMR18650-1500mAh	75mA	4.2V	0°C	45°C
IMR18650-1300mAh	65mA	4.2V	0°C	45°C
IMR18650-1200mAh	60mA	4.2V	0°C	45°C
IMR18650-800mAh	40mA	4.2V	0°C	45°C

Construction:





Items	Description	Dimension
H	Height	65.15mm Max
D	Diameter	18.50mm Max

Cell (Unit: mm)

Amendment 1:

All test data from the previous report with number 220623033SZN-001 issued on 09 Oct. 2022 (Certificate No. SG ITS-29846). In addition, this report contains the following changes:
- Changed the model from “18650-2000mAh, 18650-1800mAh, 18650-1500mAh, 18650-1300mAh, 18650-1200mAh, 18650-800mAh” to “IMR18650-2000mAh, IMR18650-1800mAh, IMR18650-1500mAh, IMR18650-1300mAh, IMR18650-1200mAh, IMR18650-800mAh”, updated the marking plate accordingly (For the “IMR” in cell model only used as cell model name, not related to the material of cell).
- Updated the photos in appendix 1 due to add a new screen printing, others remain unchanged. And cell with model IMR18650-1200mAh has two different outer colors (one is blue, and the other is purple).
- Updated the volumetric energy density in the appendix 2 national differences.
- Updated the verdict of clause 7.3.8.1 and 7.3.8.2.

Based on the above amendments, no additional test was required.

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
4	**PARAMETER MEASUREMENT TOLERANCES**		P
	Parameter measurement tolerances		P
5	**GENERAL SAFETY CONSIDERATIONS**		P
5.1	**General**		P
	Cells and batteries so designed and constructed that they are safe under conditions of both intended use and reasonably foreseeable misuse		P
5.2	**Insulation and wiring**		N/A
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 MΩ		N/A
	Insulation resistance (MΩ) ..... :		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		N/A
	Orientation of wiring maintains adequate clearances and creepage distances between conductors		N/A
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		N/A
5.3	**Venting**		P
	Battery cases and cells incorporate a pressure relief mechanism or are constructed so that they relieve excessive internal pressure at a value and rate that will preclude rupture, explosion and self-ignition	Venting mechanism exists on the 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		N/A
5.4	**Temperature, voltage and current management**		N/A
	Batteries are designed such that abnormal temperature rise conditions are prevented	Cell only.	N/A
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer		N/A
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that specified chargers are designed to maintain charging within the temperature, voltage and current limits specified		N/A
5.5	**Terminal contacts**		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	Electrode plate contacts complied with the requirements.	P
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance		P
	Terminal contacts are arranged to minimize the risk of short circuits		P
5.6	**Assembly of cells into batteries**		N/A
5.6.1	General	Cell only.	N/A
	Each battery has an independent control and protection for current, voltage, temperature and any other parameter required for safety and to maintain the cells within their operating region		N/A
	This protection may be provided external to the battery such as within the charger or the end devices		N/A
	If protection is external to the battery, the manufacturer of the battery provide this safety relevant information to the external device manufacturer for implementation		N/A
	If there is more than one battery housed in a single battery case, each battery has protective circuitry that can maintain the cells within their operating regions		N/A
	Manufacturers of cells specify current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly		N/A
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate circuitry to prevent operation of cells outside the limits specified by the cell manufacturer		N/A
	Protective circuit components are added as appropriate and consideration given to the end-device application		N/A
	The manufacturer of the battery provide a safety analysis of the battery safety circuitry with a test report including a fault analysis of the protection circuit under both charging and discharging conditions confirming the compliance		N/A
5.6.2	Design recommendation	Cell only.	N/A
	For the battery consisting of a single cell or a single cellblock, it is recommended that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 2		N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that the voltages of any one of the single cells or single cellblocks does not exceed the upper limit of the charging voltage, specified in Table 2, by monitoring the voltage of every single cell or the single cellblocks		N/A
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, it is recommended that charging is stopped when the upper limit of the charging voltage is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks		N/A
	For batteries consisting of series-connected cells or cell blocks, nominal charge voltage are not counted as an overcharge protection		N/A
	For batteries consisting of series-connected cells or cell blocks, cells have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer		N/A
	It is recommended that the cells and cell blocks are not discharged beyond the cell manufacturer's specified final voltage		N/A
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry are incorporated into the battery management system		N/A
5.6.3	Mechanical protection for cells and components of batteries	Cell only.	N/A
	Mechanical protection for cells, cell connections and control circuits within the battery are provided to prevent damage as a result of intended use and reasonably foreseeable misuse		N/A
	The mechanical protection can be provided by the battery case or it can be provided by the end product enclosure for those batteries intended for building into an end product		N/A
	The battery case and compartments housing cells are designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer		N/A
	For batteries intended for building into a portable end product, testing with the battery installed within the end product is considered when conducting mechanical tests		N/A
5.7	**Quality plan**		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	The manufacturer prepares and implements a quality plan that defines procedures for the inspection of materials, components, cells and batteries and which covers the whole process of producing each type of cell or battery	Complied. Quality control plan provided.	P
5.8	**Battery safety components**		N/A
6	**TYPE TEST AND SAMPLE SIZE**		P
	Tests are made with the number of cells or batteries specified in Table 1 using cells or batteries that are not more than six months old		P
	The internal resistance of coin cells are measured in accordance with Annex D. Coin cells with internal resistance less than or equal to 3 Ω are tested in accordance with Table 1	Not coin cells.	N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of 20 °C ± 5 °C		P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and over discharge protection	Cell only.	N/A
	When conducting the short-circuit test, consideration is given to the simulation of any single fault condition that is likely to occur in the protecting circuit that would affect the short-circuit test	Cell only.	N/A
7	**SPECIFIC REQUIREMENTS AND TESTS**		P
7.1	**Charging procedure for test purposes**		P
7.1.1	First procedure		P
	This charging procedure applies to subclauses other than those specified in 7.1.2		P
	Unless otherwise stated in this document, the charging procedure for test purposes is carried out in an ambient temperature of 20 °C ± 5 °C, using the method declared by the manufacturer		P
	Prior to charging, the battery has been discharged at 20 °C ± 5 °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 to 4 h, at an ambient temperature of the highest test temperature and the lowest test temperature, respectively, as specified in Table 2, cells are charged by using the upper limit charging voltage and maximum charging current, until the charging current is reduced to 0,05 It A, using a constant current to constant voltage charging method	Charge temperature range: 0~45°C declared. 0°C used for lower limit tests. 45°C used for upper limit tests.	P
7.2	**Intended use**		P
7.2.1	Continuous charging at constant voltage (cells)		P
	Fully charged cells are subjected for 7 days to a charge using the charging method for current and standard voltage specified by the cell manufacturer	Charging for 7 days with 0.5C mA.	P
	Results: no fire, no explosion, no leakage.....:	(See appended table 7.2.1)	P
7.2.2	Case stress at high ambient temperature (battery)	Cell only.	N/A
	Oven temperature (°C).....:		—
	Results: no physical distortion of the battery case resulting in exposure of internal protective components and cells		N/A
7.3	**Reasonably foreseeable misuse**		P
7.3.1	External short-circuit (cells)	Tested complied.	P
	The cells were tested until one of the following occurred:		P
	- 24 hours elapsed; or		N/A
	- The case temperature declined by 20 % of the maximum temperature rise		P
	Results: no fire, no explosion.....:	(See appended table 7.3.1)	P
7.3.2	External short-circuit (battery)	Cell only.	N/A
	The batteries were tested until one of the following occurred:		N/A
	- 24 hours elapsed; or		N/A
	- The case temperature declined by 20 % of the maximum temperature rise		N/A
	In case of rapid decline in short circuit current, the battery pack remained on test for an additional one hour after the current reached a low end steady state condition		N/A
	A single fault in the discharge protection circuit is conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test		N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	A single fault applies to protective component parts such as MOSFET (metal oxide semiconductor field-effect transistor), fuse, thermostat or positive temperature coefficient (PTC) thermistor		N/A
	Results: no fire, no explosion ..... :		N/A
7.3.3	Free fall (cells)	Tested complied.	P
	Results: no fire, no explosion	No fire. No explosion.	P
7.3.4	Thermal abuse (cells)	Tested complied.	P
	Oven temperature (°C) ..... :	130	—
	Results: no fire, no explosion	No fire. No explosion.	P
7.3.5	Crush (cells)	Tested complied.	P
	The crushing force was released upon:		P
	- The maximum force of 13 kN ± 0,78 kN has been applied; or		P
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N/A
	Results: no fire, no explosion ..... :	(See appended table 7.3.5)	P
7.3.6	Over-charging of battery	Cell only.	N/A
	The supply voltage which is:		N/A
	- 1,4 times the upper limit charging voltage presented in Table A.1 (but not to exceed 6,0 V) for single cell/cell block batteries or		N/A
	- 1,2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and		N/A
	- Sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached		N/A
	Test was continued until the temperature of the outer casing:		N/A
	- Reached steady state conditions (less than 10 °C change in 30-minute period); or		N/A
	- Returned to ambient		P
	Results: no fire, no explosion ..... :		N/A
7.3.7	Forced discharge (cells)	Tested complied.	P
	Discharge a single cell to the lower limit discharge voltage specified by the cell manufacturer	Lower limit discharge voltage 2.75V.	P
	The discharged cell is then subjected to a forced discharge at 1 It A to the negative value of the upper limit charging voltage		P

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Clause	Requirement + Test	Result - Remark	Verdict
	- The discharge voltage reaches the negative value of upper limit charging voltage within the testing duration. The voltage is maintained at the negative value of the upper limit charging voltage by reducing the current for the remainder of the testing duration		N/A
	- The discharge voltage does not reach the negative value of upper limit charging voltage within the testing duration. The test is terminated at the end of the testing duration		P
	Results: no fire, no explosion ..... :	(See appended table 7.3.7)	P
7.3.8	Mechanical tests (batteries)		N/A
7.3.8.1	Vibration	Cell only.	N/A
	Results: no fire, no explosion, no rupture, no leakage or venting. ..... :		N/A
7.3.8.2	Mechanical shock	Cell only.	N/A
	Results: no leakage, no venting, no rupture, no explosion and no fire ..... :		N/A
7.3.9	Design evaluation – Forced internal short-circuit (cells)	Tested complied.	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

8	**INFORMATION FOR SAFETY**		P
8.1	**General**		P
	Manufacturers of secondary cells provides information about current, voltage and temperature limits of their products	Information for safety mentioned in manufacturer's specifications.	P
	Manufacturers of batteries provides information regarding how to minimize and mitigate hazards to equipment manufacturers or end-users	Cell only.	N/A
	Systems analyses are performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		N/A
	As appropriate, any information relating to hazard avoidance resulting from a system analysis is provided to the end user		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Do not allow children to replace batteries without adult supervision		N/A
8.2	**Small cell and battery safety information**	Not small cell.	N/A
	The following warning language is to be provided with the information packaged with the small cells and batteries or equipment using them:		N/A
	- Keep small cells and batteries which are considered swallowable out of the reach of children		N/A
	- Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion		N/A
	- In case of ingestion of a cell or battery, seek medical assistance promptly		N/A
9	**MARKING**		P
9.1	**Cell marking**	The cell is marked in accordance with IEC 61960, also see copy of marking plate.	P
	Cells are marked as specified in IEC 61960, except coin cells		N/A
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity		N/A
	By agreement between the cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked		N/A
9.2	**Battery marking**	Cell only.	N/A
	Batteries are marked as specified in IEC 61960, except for coin batteries		N/A
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity		N/A
	Batteries are marked with an appropriate caution statement		N/A
	- Terminals have clear polarity marking on the external surface of the battery, or		N/A
	- Not be marked with polarity markings if the design of the external connector prevents reverse polarity connections		N/A
9.3	**Caution for ingestion of small cells and batteries**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Coin cells and batteries identified as small batteries include a caution statement regarding the hazards of ingestion in accordance with 8.2	Not coin cells.	N/A
	Small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion is given on the immediate package	Not intended for direct sale.	N/A
9.4	**Other information**	Cell only.	N/A
	The following information are marked on or supplied with the battery:		N/A
	- Storage and disposal instructions		N/A
	- Recommended charging instructions		N/A
10	**PACKAGING AND TRANSPORT**		N/A
	Packaging for coin cells are not be small enough to fit within the limits of the ingestion gauge of Figure 3		N/A
ANNEX A	**CHARGING AND DISCHARGING RANGE OF SECONDARY LITHIUM ION CELLS FOR SAFE USE**		P
A.1	**General**		P
A.2	**Safety of lithium ion secondary battery**	Complied.	P
A.3	**Consideration on charging voltage**	Complied.	P
A.3.1	General		P
A.3.2	Upper limit charging voltage	4.2V applied.	P
A.3.2.1	General		P
A.3.2.2	Explanation of safety viewpoint		N/A
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	4.2V applied.	N/A
A.4	**Consideration of temperature and charging current**		P
A.4.1	General		P
A.4.2	Recommended temperature range	See A.4.2.2.	P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied	Charging temperature declared by client is: 0-45°C.	P
A.4.3	High temperature range	Not higher than the temperature specific in this standard.	N/A
A.4.3.1	General		N/A
A.4.3.2	Explanation of safety viewpoint		N/A

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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	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	-5°C applied for testing in this report for safety considerations.	P
A.4.5	Scope of the application of charging current		P
A.4.6	Consideration of discharge		P
A.4.6.1	General		P
A.4.6.2	Final discharge voltage and explanation of safety viewpoint		P
A.4.6.3	Discharge current and temperature range		P
A.4.6.4	Scope of application of the discharging current		P
A.5	**Sample preparation**		P
A.5.1	General		P
A.5.2	Insertion procedure for nickel particle to generate internal short		P
A.5.3	Disassembly of charged cell		P
A.5.4	Shape of nickel particle		P
A.5.5	Insertion of nickel particle in cylindrical cell		P
A.5.5.1	Insertion of nickel particle in winding core		P
A.5.5.2	Marking the position of the nickel particle on both ends of the winding core of the separator		P
A.5.6	Insertion of nickel particle in prismatic cell		N/A
A.6	**Experimental procedure of the forced internal short-circuit test**		P
A.6.1	Material and tools for preparation of nickel particle		P
A.6.2	Example of a nickel particle preparation procedure		P
A.6.3	Positioning (or placement) of a nickel particle		P
A.6.4	Damaged separator precaution		P
A.6.5	Caution for rewinding separator and electrode		P

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Clause	Requirement + Test	Result - Remark	Verdict
A.6.6	Insulation film for preventing short-circuit		P
A.6.7	Caution when disassembling a cell		P
A.6.8	Protective equipment for safety		P
A.6.9	Caution in the case of fire during disassembling		P
A.6.10	Caution for the disassembling process and pressing the electrode core		P
A.6.11	Recommended specifications for the pressing device		P
ANNEX B	**RECOMMENDATIONS TO EQUIPMENT MANUFACTURERS AND BATTERY ASSEMBLERS**		N/A
ANNEX C	**RECOMMENDATIONS TO THE END-USERS**		N/A
ANNEX D	**MEASUREMENT OF THE INTERNAL AC RESISTANCE FOR COIN CELLS**		N/A
D.1	**General**		N/A
D.2	**Method**		N/A
	A sample size of three coin cells is required for this measurement		N/A
	Coin cells with an internal resistance greater than 3 Ω require no further testing .....:		N/A
	Coin cells with an internal resistance less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1		N/A
ANNEX E	**PACKAGING AND TRANSPORT**		N/A
ANNEX F	**COMPONENT STANDARDS REFERENCES**		N/A

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

7.2.1	TABLE: Continuous charging at constant voltage (cells)	P

Sample No.	Recommended charging voltage Vc (Vdc)	Recommended charging current I_{rec} (A)	OCV before test (Vdc)	Results
Model: IMR18650-2000mAh				
C01	4.20	1.0	4.20	P
C02	4.20	1.0	4.20	P
C03	4.20	1.0	4.20	P
C04	4.20	1.0	4.20	P
C05	4.20	1.0	4.20	P
Model: IMR18650-1500mAh				
C01	4.20	0.75	4.20	P
C02	4.20	0.75	4.20	P
C03	4.20	0.75	4.20	P
C04	4.20	0.75	4.20	P
C05	4.20	0.75	4.20	P
Model: IMR18650-1300mAh				
C01	4.20	0.65	4.20	P
C02	4.20	0.65	4.20	P
C03	4.20	0.65	4.20	P
C04	4.20	0.65	4.20	P
C05	4.20	0.65	4.20	P
Model: IMR18650-1200mAh				
C01	4.20	0.6	4.20	P
C02	4.20	0.6	4.20	P
C03	4.20	0.6	4.20	P
C04	4.20	0.6	4.20	P
C05	4.20	0.6	4.20	P
Model: IMR18650-800mAh				
C01	4.20	0.4	4.20	P
C02	4.20	0.4	4.20	P
C03	4.20	0.4	4.20	P
C04	4.20	0.4	4.20	P
C05	4.20	0.4	4.20	P

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

Supplementary information:
- No fire or explosion
- No leakage

7.3.1	**TABLE: External short circuit (cells)**	**P**

Sample No.	**Ambient (°C)**	**OCV at start of test (Vdc)**	**Resistance of circuit (mΩ)**	**Maximum case temperature ~~rise ΔT (K)~~ (°C)**	**Results**
Model: IMR18650-2000mAh					
Samples charged at charging temperature upper limit [1)]					
C06	55.4	4.17	81	132.7	P
C07	55.4	4.18	82	133.9	P
C08	55.4	4.18	80	135.9	P
C09	55.4	4.18	80	134.4	P
C10	55.4	4.18	85	133.0	P
Samples charged at charging temperature lower limit [2)]					
C11	55.4	4.14	87	129.0	P
C12	55.4	4.13	80	126.0	P
C13	55.4	4.13	83	135.0	P
C14	55.4	4.13	84	130.2	P
C15	55.4	4.14	84	130.2	P
Model: IMR18650-1500mAh					
Samples charged at charging temperature upper limit [1)]					
C06	57.1	4.18	80	128.9	P
C07	57.1	4.18	81	126.9	P
C08	57.1	4.17	83	125.7	P
C09	57.1	4.18	84	121.8	P
C10	57.1	4.17	80	126.3	P
Samples charged at charging temperature lower limit [2)]					
C11	57.1	4.14	83	120.1	P
C12	57.1	4.13	83	129.7	P
C13	57.1	4.14	81	118.4	P
C14	57.1	4.13	85	122.3	P
C15	57.1	4.13	82	120.4	P
Model: IMR18650-1300mAh					
Samples charged at charging temperature upper limit [1)]					
C06	56.3	4.18	83	101.3	P

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Clause	Requirement + Test		Result - Remark		Verdict
C07	56.3	4.17	80	94.7	P
C08	56.3	4.17	80	101.7	P
C09	56.3	4.17	81	99.3	P
C10	56.3	4.17	82	98.6	P
Samples charged at charging temperature lower limit [2)]					
C11	56.3	4.14	80	98.3	P
C12	56.3	4.13	80	98.6	P
C13	56.3	4.13	84	92.8	P
C14	56.3	4.13	85	106.2	P
C15	56.3	4.13	82	107.2	P
Model: IMR18650-1200mAh					
Samples charged at charging temperature upper limit [1)]					
C06	56.8	4.18	80	118.8	P
C07	56.8	4.18	82	115.2	P
C08	56.8	4.18	81	111.1	P
C09	56.8	4.18	85	110.0	P
C010	56.8	4.17	83	112.2	P
Samples charged at charging temperature lower limit [2)]					
C11	56.8	4.13	81	116.4	P
C12	56.8	4.13	82	119.9	P
C13	56.8	4.14	84	119.4	P
C14	56.8	4.14	80	117.8	P
C15	56.8	4.13	80	106.1	P
Model: IMR18650-800mAh					
Samples charged at charging temperature upper limit [1)]					
C06	55.8	4.17	81	101.2	P
C07	55.8	4.18	80	100.0	P
C08	55.8	4.17	81	99.9	P
C09	55.8	4.17	81	92.5	P
C10	55.8	4.18	82	94.5	P
Samples charged at charging temperature lower limit [2)]					
C11	55.8	4.13	82	93.7	P
C12	55.8	4.14	80	93.7	P
C13	55.8	4.14	83	90.5	P
C14	55.8	4.14	85	90.1	P

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Clause	Requirement + Test	Result - Remark	Verdict

C15	55.8	4.13	80	93.0	P

Supplementary information:

- No fire or explosion

1) Cells charged at 45°C

2) Cells charged at -5°C

7.3.2	TABLE: External short circuit (battery)					N/A
Sample No.	**Ambient T (°C)**	**OCV before test (Vdc)**	**Resistance of circuit (mΩ)**	**Maximum case temperature ~~rise ΔT (K)~~ (°C)**	**Component single fault condition**	**Results**

Supplementary information:

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**
Model: IMR18650-2000mAh				
Samples charged at charging temperature upper limit 1)				
C029	4.17	4.17	13.10	P
C030	4.17	4.17	13.05	P
C031	4.18	4.18	13.01	P
C032	4.17	4.17	13.00	P
C033	4.18	4.18	13.06	P
Samples charged at charging temperature lower limit 2)				
C034	4.13	4.13	13.05	P
C035	4.14	4.14	13.09	P
C036	4.14	4.14	13.04	P
C037	4.14	4.14	13.04	P
C038	4.13	4.13	13.06	P
Model: IMR18650-1500mAh				
Samples charged at charging temperature upper limit 1)				

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Clause	Requirement + Test	Result - Remark	Verdict

C029	4.18	4.18	13.01	P
C030	4.18	4.18	13.07	P
C031	4.17	4.17	13.08	P
C032	4.17	4.17	13.00	P
C033	4.18	4.18	13.04	P
Samples charged at charging temperature lower limit [2)]				
C034	4.13	4.13	13.05	P
C035	4.13	4.13	13.10	P
C036	4.14	4.14	13.08	P
C037	4.13	4.13	13.09	P
C038	4.14	4.14	13.09	P
Model: IMR18650-1300mAh				
Samples charged at charging temperature upper limit [1)]				
C029	4.18	4.18	13.03	P
C030	4.18	4.18	13.03	P
C031	4.17	4.17	13.08	P
C032	4.18	4.18	13.07	P
C033	4.18	4.18	13.04	P
Samples charged at charging temperature lower limit [2)]				
C034	4.13	4.13	13.09	P
C035	4.13	4.13	13.03	P
C036	4.13	4.13	13.06	P
C037	4.13	4.13	13.07	P
C038	4.13	4.13	13.08	P
Model: IMR18650-1200mAh				
Samples charged at charging temperature upper limit [1)]				
C029	4.18	4.18	13.01	P
C030	4.17	4.17	13.02	P
C031	4.17	4.17	13.08	P
C032	4.18	4.18	13.00	P
C033	4.18	4.18	13.01	P
Samples charged at charging temperature lower limit [2)]				
C034	4.14	4.14	13.09	P
C035	4.13	4.13	13.11	P
C036	4.14	4.14	13.08	P

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

C037	4.13	4.13	13.03	P
C038	4.13	4.13	13.01	P
Model: IMR18650-800mAh				
Samples charged at charging temperature upper limit [1)]				
C029	4.18	4.18	12.99	P
C030	4.18	4.18	13.02	P
C031	4.18	4.18	13.07	P
C032	4.17	4.17	13.05	P
C033	4.17	4.17	13.10	P
Samples charged at charging temperature lower limit [2)]				
C034	4.13	4.13	13.07	P
C035	4.13	4.13	13.03	P
C036	4.13	4.13	13.05	P
C037	4.14	4.14	13.03	P
C038	4.13	4.13	13.02	P

Supplementary information:

- No fire or explosion

[1)] Cells charged at 45°C

[2)] Cells charged at -5°C

7.3.6	**TABLE: Over-charging of battery**			**N/A**
Constant charging current (A) ..... :				**—**
Supply voltage (Vdc) ..... :				**—**
Sample No.	**OCV before charging (Vdc)**	**Total charging time (minute)**	**Maximum outer case temperature (°C)**	**Results**

Supplementary information:

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

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**
Model: IMR18650-2000mAh				
C039	3.08	2.0	2.75	P
C040	3.08	2.0	2.75	P
C041	3.05	2.0	2.75	P
C042	3.09	2.0	2.75	P
C043	3.08	2.0	2.75	P
Model: IMR18650-1500mAh				
C039	3.00	1.5	2.75	P
C040	3.05	1.5	2.75	P
C041	3.10	1.5	2.75	P
C042	3.09	1.5	2.75	P
C043	3.07	1.5	2.75	P
Model: IMR18650-1300mAh				
C039	3.13	1.3	2.75	P
C040	3.10	1.3	2.75	P
C041	3.15	1.3	2.75	P
C042	3.12	1.3	2.75	P
C043	3.07	1.3	2.75	P
Model: IMR18650-1200mAh				
C039	3.20	1.2	2.75	P
C040	3.24	1.2	2.75	P
C041	3.23	1.2	2.75	P
C042	3.26	1.2	2.75	P
C043	3.27	1.2	2.75	P
Model: IMR18650-800mAh				
C039	3.07	0.8	2.75	P
C040	3.05	0.8	2.75	P
C041	3.05	0.8	2.75	P
C042	3.05	0.8	2.75	P
C043	3.04	0.8	2.75	P

Supplementary information:
- No fire or explosion

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

7.3.8.1	TABLE: Vibration				N/A
Sample No.	**OCV before test (Vdc)**	**OCV after test (Vdc)**	**Mass before test (g)**	**Mass after test (g)**	**Results**
Supplementary information:					

7.3.8.2	TABLE: Mechanical shock				N/A
Sample No.	**OCV before test (Vdc)**	**OCV after test (Vdc)**	**Mass before test (g)**	**Mass after test (g)**	**Results**
Supplementary information:					

7.3.9	TABLE: Forced internal short circuit (cells)				P
Sample No.	**Chamber ambient T (°C)**	**OCV before test (Vdc)**	**Particle location [1)]**	**Maximum applied pressure (N)**	**Results**
Model: IMR18650-2000mAh					
Samples charged at charging temperature upper limit [2)]					
C044	45	4.17	1	800	P
C045	45	4.18	1	800	P
C046	45	4.18	1	800	P
C047	45	4.18	1*	800	P
C048	45	4.18	1*	800	P
Samples charged at charging temperature lower limit [3)]					
C049	-5	4.14	1	800	P
C050	-5	4.14	1	800	P
C051	-5	4.14	1	800	P
C052	-5	4.13	1*	800	P
C053	-5	4.13	1*	800	P
Model: IMR18650-1500mAh					
Samples charged at charging temperature upper limit [2)]					
C044	45	4.17	1	800	P

IEC 62133-2					
Clause	Requirement + Test			Result - Remark	Verdict
C045	45	4.17	1	800	P
C046	45	4.18	1	800	P
C047	45	4.17	1*	800	P
C048	45	4.17	1*	800	P
Samples charged at charging temperature lower limit 3)					
C049	-5	4.13	1	800	P
C050	-5	4.13	1	800	P
C051	-5	4.13	1	800	P
C052	-5	4.14	1*	800	P
C053	-5	4.14	1*	800	P
Model: IMR18650-1300mAh					
Samples charged at charging temperature upper limit 2)					
C044	45	4.18	1	800	P
C045	45	4.18	1	800	P
C046	45	4.18	1	800	P
C047	45	4.17	1*	800	P
C048	45	4.18	1*	800	P
Samples charged at charging temperature lower limit 3)					
C049	-5	4.14	1	800	P
C050	-5	4.13	1	800	P
C051	-5	4.13	1	800	P
C052	-5	4.14	1*	800	P
C053	-5	4.13	1*	800	P
Model: IMR18650-1200mAh					
Samples charged at charging temperature upper limit 2)					
C044	45	4.18	1	800	P
C045	45	4.18	1	800	P
C046	45	4.18	1	800	P
C047	45	4.18	1*	800	P
C048	45	4.17	1*	800	P
Samples charged at charging temperature lower limit 3)					
C049	-5	413	1	800	P
C050	-5	4.14	1	800	P
C051	-5	4.13	1	800	P
C052	-5	4.14	1*	800	P

IEC 62133-2					
Clause	Requirement + Test		Result - Remark		Verdict
C053	-5	4.14	1*	800	P
Model: IMR18650-800mAh					
Samples charged at charging temperature upper limit [2)]					
C044	45	4.18	1	800	P
C045	45	4.18	1	800	P
C046	45	4.18	1	800	P
C047	45	4.18	1*	800	P
C048	45	4.17	1*	800	P
Samples charged at charging temperature lower limit [3)]					
C049	-5	4.13	1	800	P
C050	-5	4.14	1	800	P
C051	-5	4.14	1	800	P
C052	-5	4.14	1*	800	P
C053	-5	4.13	1*	800	P

Supplementary information:

[1)] Identify one of the following:

1: Nickel particle inserted between positive and negative (active material) coated area.

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

- No fire

[2)] Cells charged at 45°C

[3)] Cells charged at -5°C

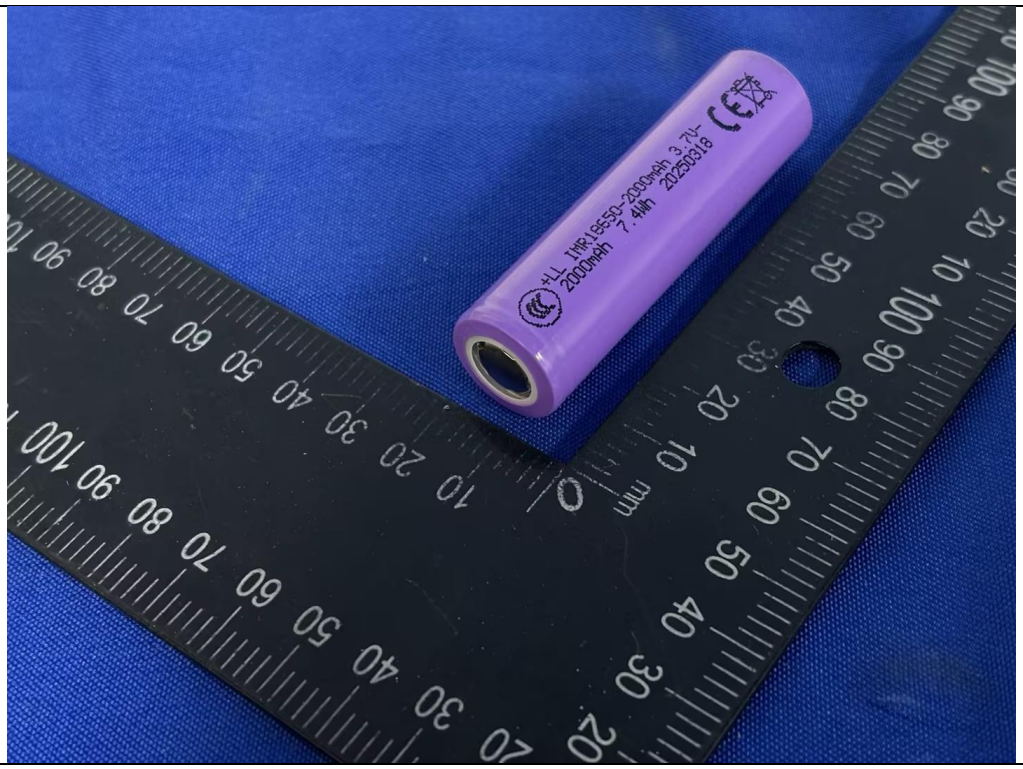
*No location 2 exists in this cell.

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

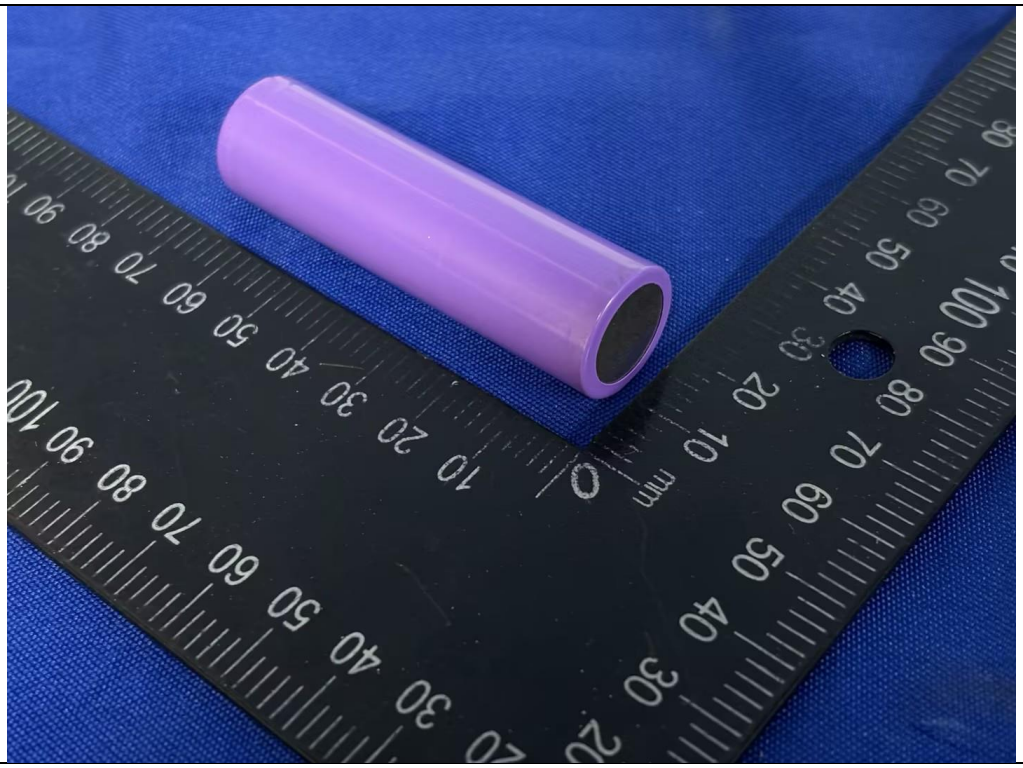
D.2	TABLE: Internal AC resistance for coin cells			N/A
Sample no.	**Ambient T (°C)**	**Store time (h)**	**Resistance Rac (Ω)**	**Results [1)]**
Supplementary information:				

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

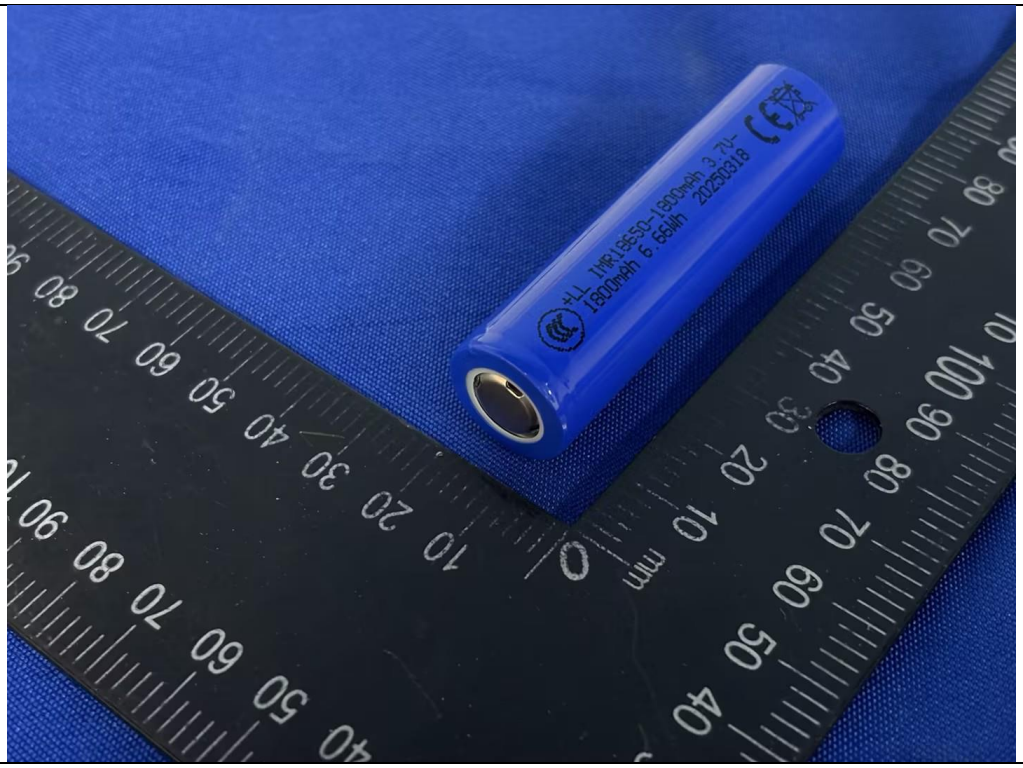
	TABLE: Critical components information				**P**
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
-Positive electrode	Hunan Shanshan Technology Co., Ltd	T31D	$Li(Ni_{0.5}Co_{0.2}Mn_{0.3})O_2$, NMP, PVDF, Conductive Additive	--	--
-Negative electrode	Shanghai Shanshan Technology Co., Ltd	FSN	Graphite, CMC, SBR, Distilled Water, Conductive Additive	--	--
-Separator	Foshan Jinhui Hi-tech	Jh20	PE, shut down temperature: 130°C	--	--
-Electrolyte	Dongguan Shanshan Technical Joints-tock Co., Ltd.	LD-1129	$LiPF_6$+EC+EMC+DEC	--	--
Supplementary information: [1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.					



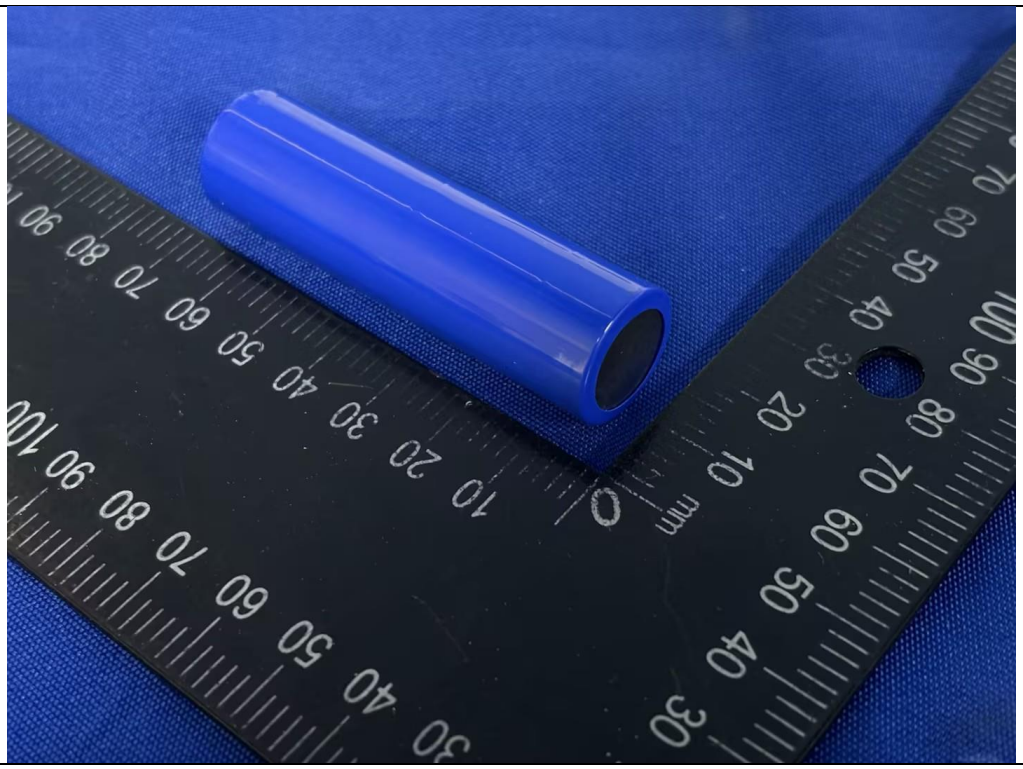
Side view-1 of cell (IMR18650-2000mAh)



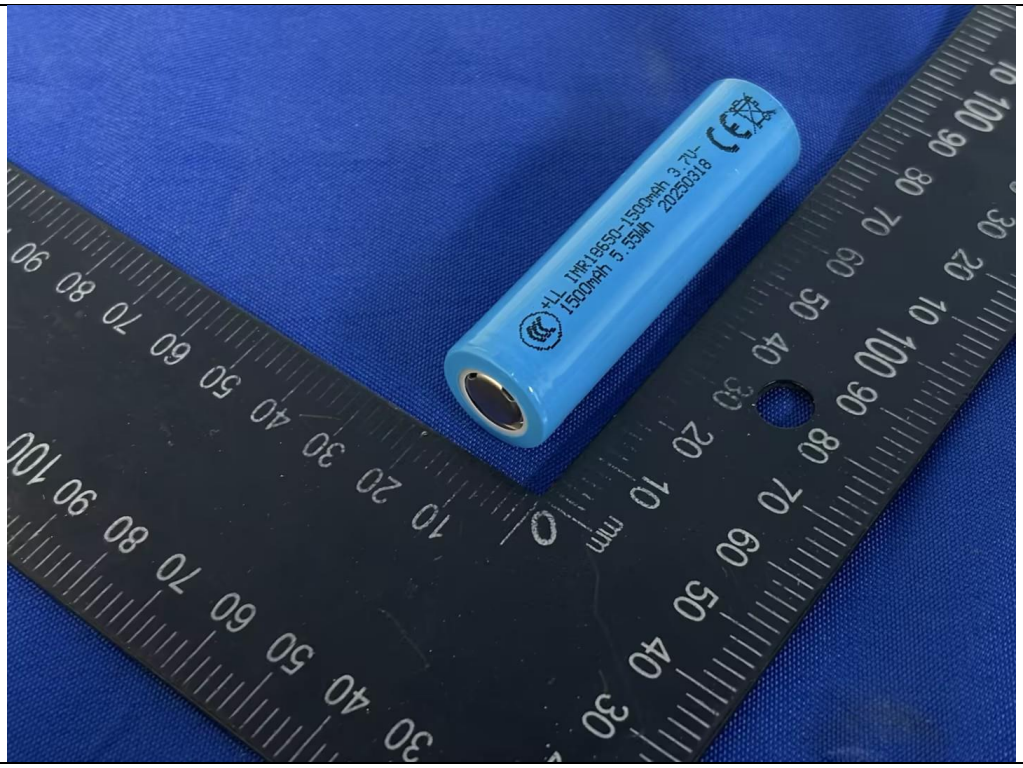
Side view-2 of cell (IMR18650-2000mAh)



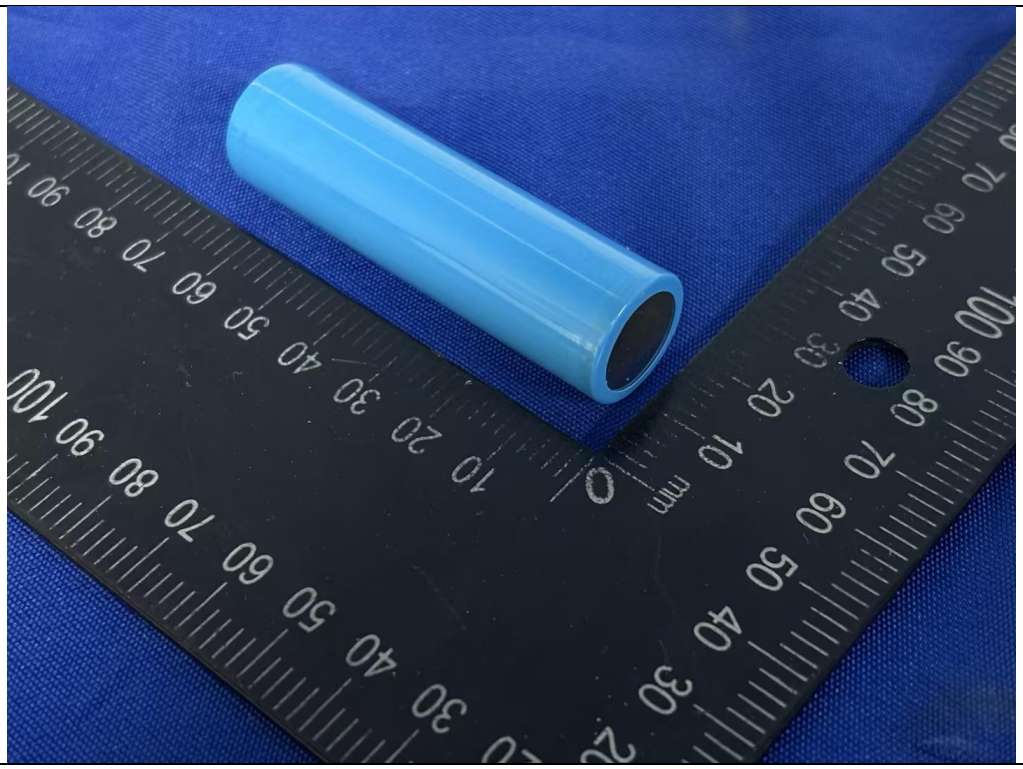
Side view-1 of cell (IMR18650-1800mAh)



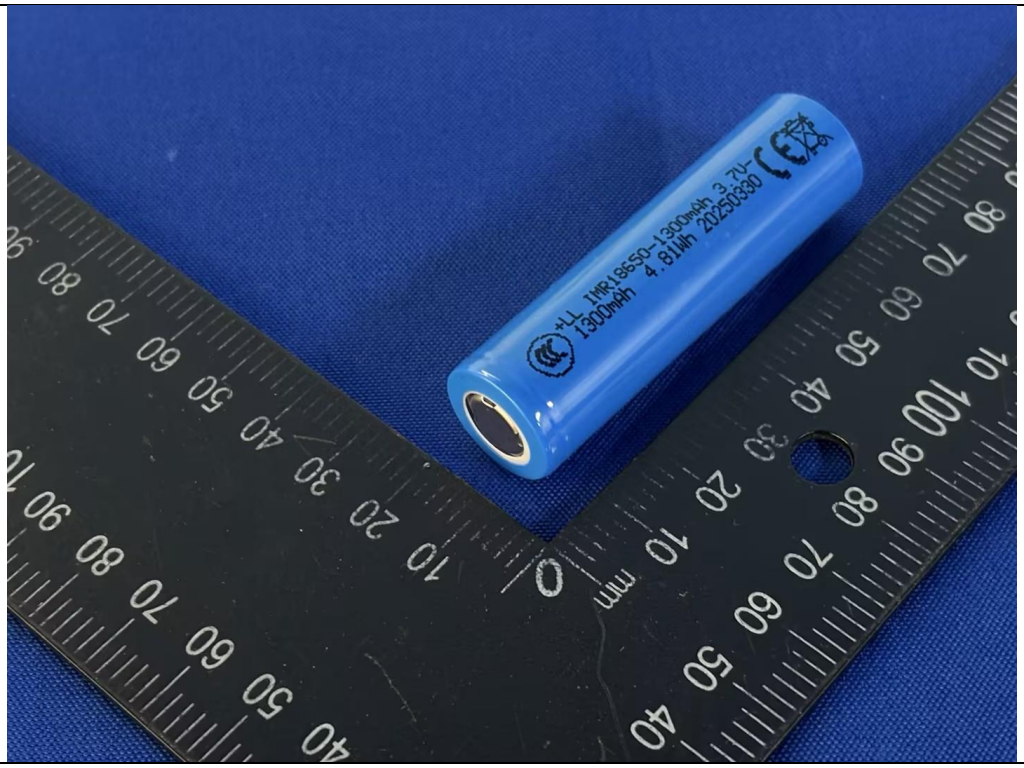
Side view-2 of cell (IMR18650-1800mAh)



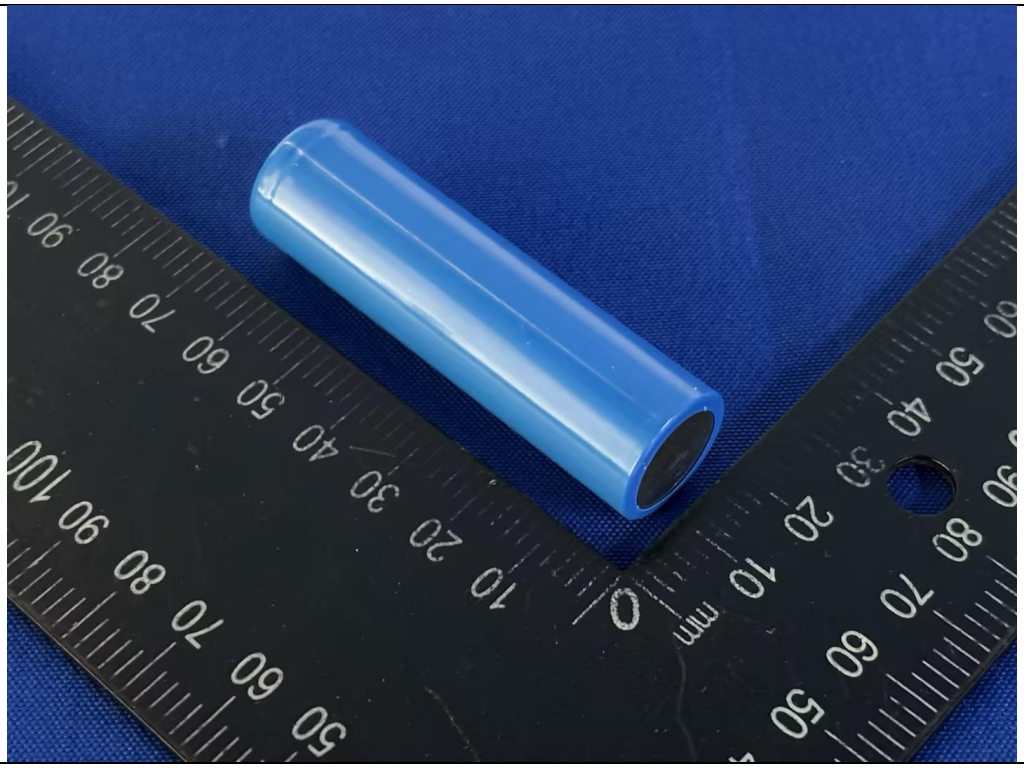
Side view-1 of cell (IMR18650-1500mAh)



Side view-2 of cell (IMR18650-1500mAh)

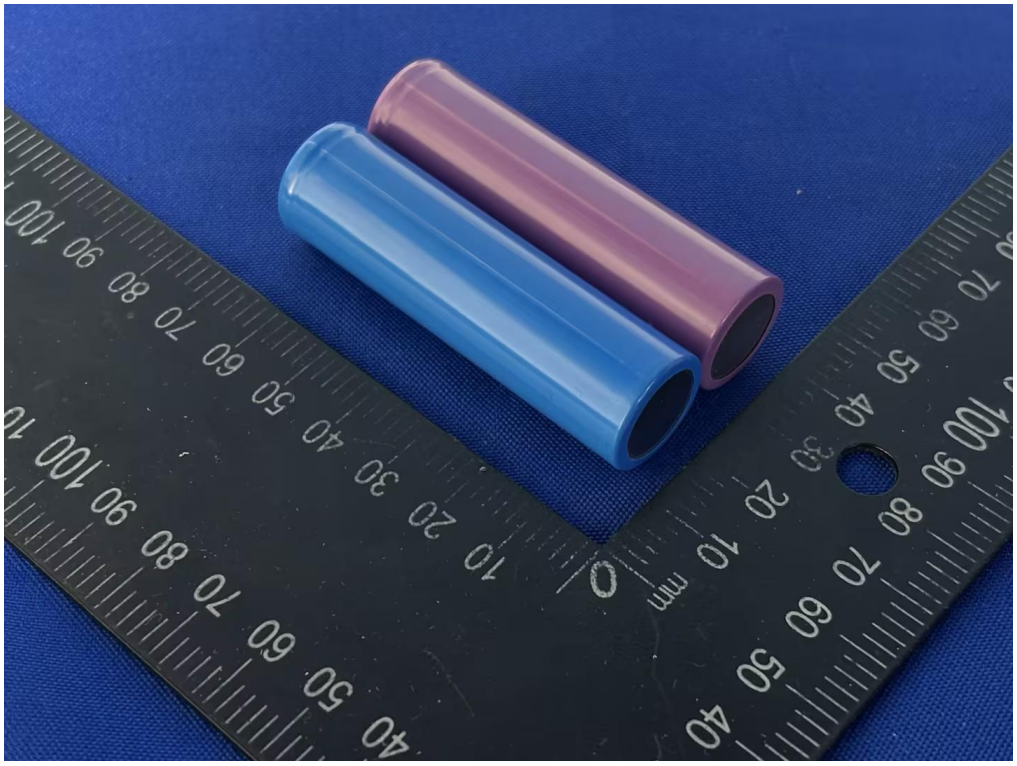


Side view-1 of cell (IMR18650-1300mAh)

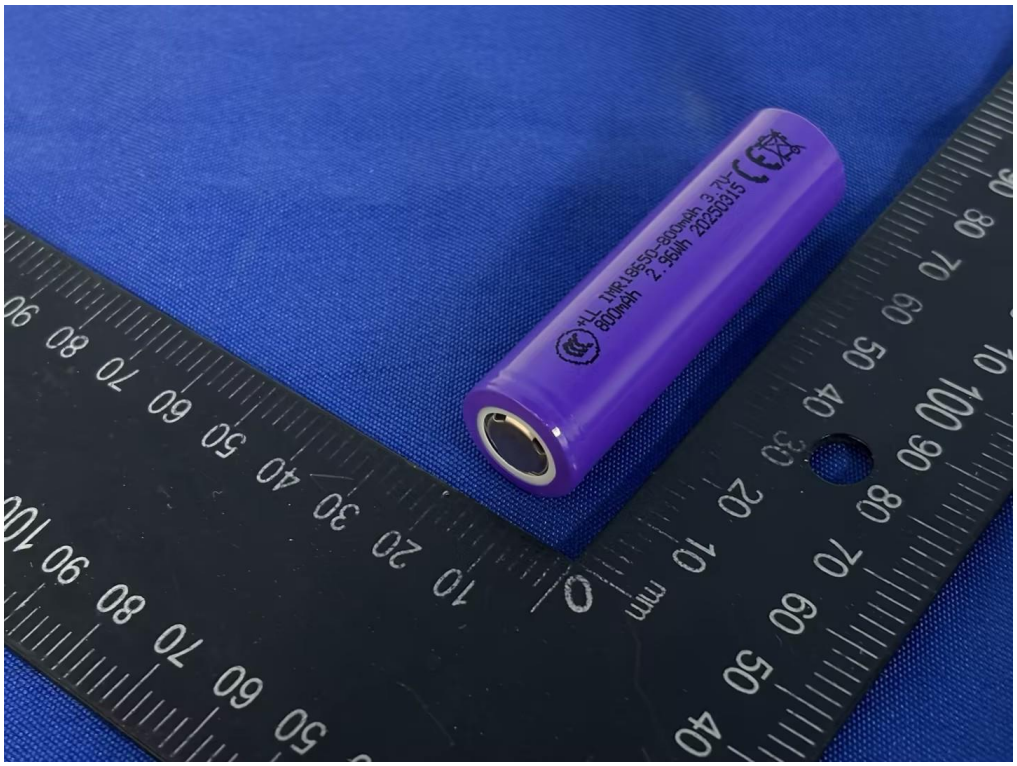


Side view-2 of cell (IMR18650-1300mAh)

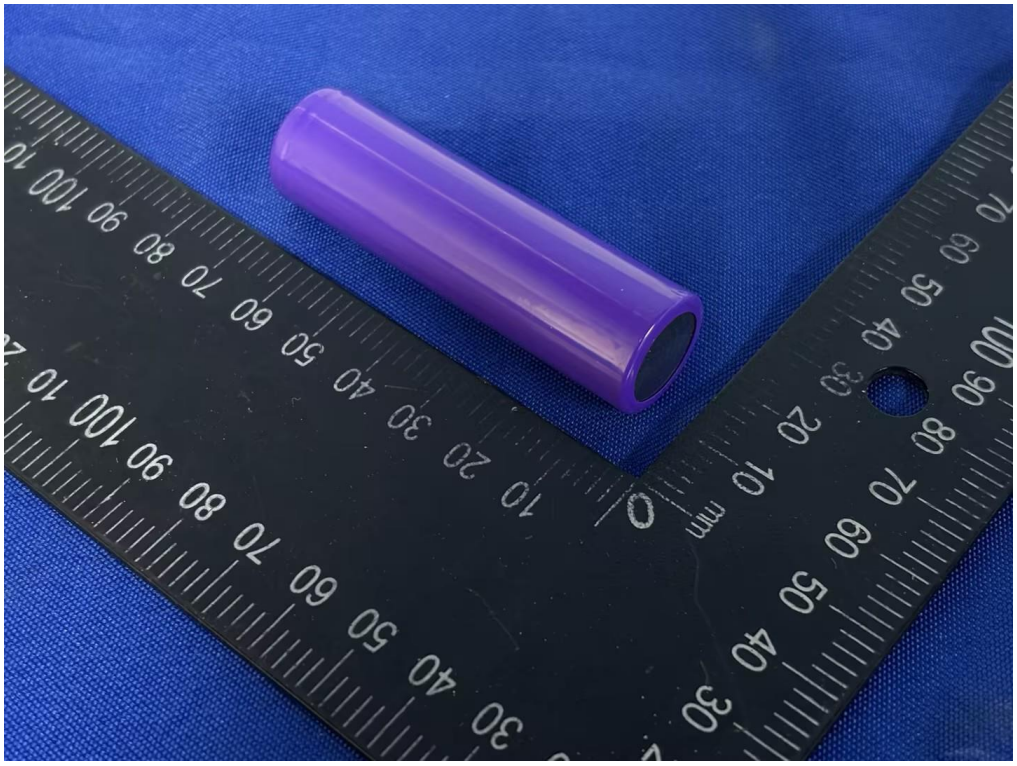
Side view-1 of cell (IMR18650-1200mAh)



Side view-2 of cell (IMR18650-1200mAh)



Side view-1 of cell (IMR18650-800mAh)



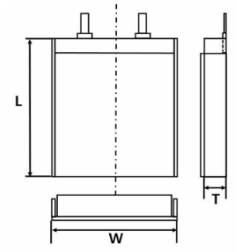
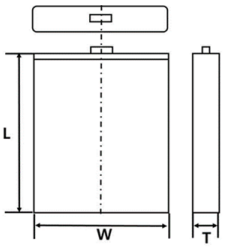
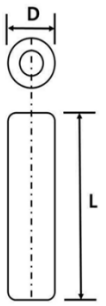
Side view-2 of cell (IMR18650-800mAh)

Report No.: 220623033SZN-001
Amendment 1: Apr. 03, 2025

ATTACHMENT to IEC62133_2C			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT **IEC 62133-2** **(Republic of Korea) NATIONAL DIFFERENCES** (Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary lithium cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems)			
Differences according to.....:	National standard KC62133-2(2020-07)		
TRF template used: .....:	IECEE OD-2020-F3:2022, Ed. 1.2		
Attachment Form No.....:	KR_ND_IEC62133_2C		
Attachment Originator .....:	KTR		
Master Attachment.....:	2023-08-02		
	National Differences		N/A
7.3.6	**Over-charging of battery**		N/A
(Revision)	***[Add the bolded text]*** b) Test The test shall be carried out in an ambient temperature of 20 °C ± 5 °C. Each test battery shall be discharged at a constant current of 0,2 I_t A, to a final discharge voltage specified by the manufacturer. Sample batteries shall then be charged at a constant current of 2,0 I_t A, using a supply voltage which is: • 1,4 times the upper limit charging voltage presented in Table A.1 (but not to exceed 6,0 V) for single cell/cell block batteries or • 1,2 times the upper limit charging voltage presented in Table A.1 per cell for series connected multi-cell batteries, and • sufficient to maintain a current of 2,0 I_t A throughout the duration of the test or until the supply voltage is reached. **• In case the charging voltage specified by the manufacturer is higher than the overcharge test voltage, the maximum charging voltage specified by manufacturer should be applied with 2.**0 I_t A**, (e.g., quick charging power bank, etc.)**		N/A

Report No.: 220623033SZN-001
Amendment 1: Apr. 03, 2025

ATTACHMENT to IEC62133_2C			
Clause	Requirement + Test	Result - Remark	Verdict
	[Replace to the following statement] c) Acceptance criteria Filling beyond the manufacturer's specified limits should not result in ignition or explosion		N/A
Annex G	**Definition for shape and materials of outer case for cell**		—
(Addition)	G.1 General Annex G provides definitions for shape and materials of outer case for cell G.2 Shape of outer case for cell G 2.1 Cylindrical cell Cell with a cylindrical shape in which the overall height is equal to or greater than diameter. G 2.2 Prismatic cell Cell having the shape of a parallelepiped whose faces are rectangular G.3 Materials of outer case for cell G.3.1 Soft case Non-metallic outer case or container for cell G.3.2 Hard case Metallic outer case or container for cell.	(Shape of outer cases) ☒ Cylindrical ☐ Prismatic (Materials of outer cases) ☒ Hard ☐ Soft	—
Annex H	**Calculation method of the volumetric energy density for cell**		—
(Addition)	Annex H provide a calculation method of the volumetric energy density for cell in use of smart phone, tablet, notebook. H.1 General Unless otherwise stated in the Annex E, the dimensions for calculation are based on these for cell before shipment and the volumetric energy density shall be calculated with a maximum values specified by manufacturer. If the specification for cell can't be provided a dimension for calculation, the manufacturer's other documentation shall be provided to demonstrate compliance for its calculation.	422.56 Wh / L(IMR18650-2000mAh) 380.30 Wh / L (IMR18650-1800mAh) 316.92 Wh / L (IMR18650-1500mAh) 274.66 Wh / L (IMR18650-1300mAh) 253.53 Wh / L (IMR18650-1200mAh) 169.02 Wh / L (IMR18650-800mAh)	—

ATTACHMENT to IEC62133_2C			
Clause	Requirement + Test	Result - Remark	Verdict
	H.2 Calculation Method  L : Length (max.) of cell (including terrace) W : Width (max.) of cell T : Thickness (max.) when shipping charge (For reference, Please Exclude the dimension of any tape that Is attached to cell) $Volumetric\ energy\ density\ (Wh/L) = \frac{Nominal\ voltage\ (V) \times Rated\ capacity\ (Ah)}{Length\ (L) \times Width\ (W)\ \times Thickness\ (T)}$ [H.1 – Prismatic cell using soft case]  L : Length (max.) of cell W : Width (max.) of cell T : Thickness when shipping charge (For reference, Please Exclude the dimension of any tape that Is attached to cell) $Volumetric\ energy\ density\ (Wh/L) = \frac{Nominal\ voltage\ (V) \times Rated\ capacity\ (Ah)}{Length\ (L) \times Width\ (W)\ \times Thickness\ (T)}$ [H.2 – Prismatic cell using hard case]  D : Diameter (max.) of cell L : Length (max.) of cell (According to shape of cell at shipping, The dimension of tube for cell may be included In overall dimension of cell) $Volumetric\ energy\ density\ (Wh/L) = \frac{Nominal\ voltage\ (V) \times Rated\ capacity\ (Ah)}{3.14159 \times \frac{Diameter\ (D)^2}{4} \times Length(L)}$ [H.3 – Cylindrical cell using hard case]		—