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TEST REPORT
JIS C 62133-2: 2020
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. ..... :	2412B0002SHA-002
Date of issue ..... :	2025-04-03
Total number of pages ..... :	31 pages
Name of Testing Laboratory preparing the Report ..... :	Intertek Testing Services (Shanghai FTZ) Co., Ltd
Applicant's name..... :	Jiangsu Reliance Energy Tech Co., Ltd.
Address ..... :	No. 66, Zhufeng Road, Xinbei District, Changzhou, Jiangsu Province, China
Test specification:	
Standard ..... :	JIS C 62133-2: 2020
Test procedure ..... :	PSE
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	JIS C 62133_2A
Test Report Form(s) Originator .... :	Intertek Testing Services (Shanghai FTZ) Co., Ltd
Master TTRF ..... :	-

Test item description ..... :	Rechargeable Lithium-ion Cell
Trade Mark ..... :	NA
Manufacturer ..... :	Same as applicant
Model/Type reference ..... :	INR21700-RS50
Ratings ..... :	3.6V 5000mAh

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**Testing Laboratory:**	Intertek Testing Services (Shanghai FTZ) Co., Ltd	
Testing location/ address ..... :		Building No.86, 1198 Qinzhou Road (North), 20033 Shanghai, China	
Tested by (name, function, signature) ..... :		Liping Chen	liping chen
Approved by (name, function, signature) ... :		Michael Zheng	Michael Zheng
☐	**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):

No.	Content	Page
1	Photos of product	30 to 31

Summary of testing:

The results indicate that the specimen complies with standard “JIS C 62133-2:2020”.

Tests performed (name of test and test clause):

Name of test	Test clause
Continuous charging at constant voltage (Li cells)	7.2.1
Temperature cycling	7.2.2A
External short-circuit (secondary cells)	7.3.1
Free Fall	7.3.3
Thermal abuse (secondary cells)	7.3.4
Crush (secondary cells)	7.3.5
Forced discharge (secondary cells)	7.3.7
Low pressure (secondary cells)	7.3.8A
High-rate charge (secondary cells)	7.3.8B
Forced internal short-circuit (secondary cells)	7.3.9

Testing location:

Intertek Testing Services (Shanghai FTZ) Co., Ltd
Building No.86, 1198 Qinzhou Road (North), 20033 Shanghai, China

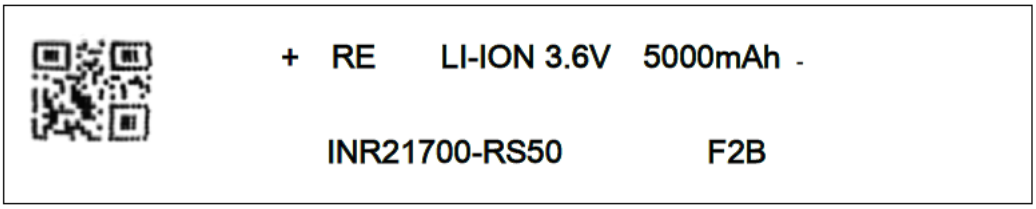
Shanghai Truron Testing Technology Co., Ltd.
1F&2F, BLDG 1,685 Huishan Rd., Shanghai, China

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

None.

Copy of marking plate:

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



Note: 1. The manufacture date is presented in YMD, Y denotes year, 2020 as A, every next year is counted as B, C, D, E...; M denotes month, January as 1, the consecutive month as 2, 3, 4, 5, 6, 7, 8, 9, A, B, C; D denotes date as 1, 2,3,4,5,6,7,8,9,A,B,C,D,E,F,G,H,J,K,L,M,N,P,R,S,T,V,W,X,Y,0.

e.g. F2B denotes manufacture date is February 11, 2025.

2. RE is present the manufacturer company.

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

Test item particulars ..... :	
Classification of installation and use.....:	To be defined in final system
Supply Connection..... :	DC terminal
Recommend charging method declared by the manufacturer..... :	Charging the cell with 2500mA constant current and 4.2V constant voltage until the current reduces to 100mA
Discharge current (0,2 It A) ..... :	1.0A
Specified final voltage..... :	2.5V
Upper limit charging voltage per cell. :	4.2V
Maximum charging current..... :	15A
Charging temperature upper limit..... :	60°C
Charging temperature lower limit ..... :	0°C
Polymer cell electrolyte type..... :	☐ gel polymer ☐ solid polymer ☒ N/A
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item .....:	2024-02-14
Date (s) of performance of tests.....:	2025-02-17 to 2025-03-20

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 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 product covered by this report is Li-ion Rechargeable cell, model no. is INR21700-RS50.

Model	INR21700- RS50
Nominal capacity	5000mAh
Nominal voltage	3.6V
Nominal Charge Current	2500mA
Nominal Discharge Current	1000mA
Maximum continuous charge current	15000mA
Maximum Instantaneous Charge Current	18000mA
Maximum Discharge Current	70000mA

Maximum Charge Voltage	4.2V
Cut-off Voltage	2.5V

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Clause	Requirement + Test	Result - Remark	Verdict
4	Parameter measurement tolerances		P
	Parameter measurement tolerances		P
5	General safety considerations		P
5.1	**General**		P
	Cells and batteries so designed and constructed that they are safe under conditions of both intended use and reasonably foreseeable misuse		P
5.2	**Insulation and wiring**		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 shall be sufficient to withstand the maximum anticipated current, voltage and temperature requirements.		N/A
	The orientation of wiring shall be such that adequate clearances and creepage distances are maintained between conductors.		N/A
	The mechanical integrity of internal connections shall be sufficient to accommodate conditions of intended use.		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		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		N/A
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer		N/A
	Cell manufacturers shall be provided with specifications and charging instructions for battery manufacturers so that specified chargers are designed to maintain charging within the temperature, voltage and current limits specified.		N/A
5.5	**Terminal contacts**		P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current		P

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

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Clause	Requirement + Test	Result - Remark	Verdict
	The requirements and recommendations for secondary battery designer are follows.		N/A
	For the battery consisting of a single cell or a single cellblock, the charging voltage of the cell shall not exceed the upper limit of the charging voltage specified in Table 2;		N/A
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks, the voltages of any one of the single cells or single cellblocks shall 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, charging shall be 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 shall not be counted as an overcharge protection.		N/A
	For batteries consisting of series-connected cells or cell blocks, cells should 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 should not be discharged beyond the cell manufacturer’s specified final voltage.		N/A
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry should be incorporated into the battery management system.		N/A
5.6.3	Mechanical protection for cells and components of batteries		N/A
	Mechanical protection for cells, cell connections and control circuits within the battery provided to prevent damage as a result of intended use and reasonably foreseeable misuse		N/A
	The mechanical protection can be provided by the battery case or it can be provided by the end product enclosure for those batteries intended for building into an end product		N/A
	The battery case and compartments housing cells designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer		N/A
	For batteries intended for building into a portable end product, testing with the battery installed within the end product considered when conducting mechanical tests		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.6.3A	Prevention of Harm from Sharp Corners		N/A
	Cells and batteries shall not have any rough or sharp corners that can cause harm in their intended use, unless necessary for their function.		N/A
	If such corners are necessary for the function of the containers, connections, etc. of cells and batteries, structural protection measures shall be taken to prevent the user (consumer) from touching them.		N/A
	However, in the case of cells or specially constructed batteries that are not intended to be handled by users (consumers), measures may be taken by agreement between the delivering parties.		N/A
5.7	**Quality plan**		P
	The manufacturer prepares and implements a quality plan that defines procedures for the inspection of materials, components, cells and batteries and which covers the whole process of producing each type of cell or battery	ISO 9001 certificate of manufacturer was provided.	P
5.8	**Battery safety components**		N/A
	According annex F		N/A
6	Type test and sample size		P
	Tests are made with the number of cells or batteries specified in Table 1 using cells or batteries that are not more than six months old		P
	Coin cells with resistance ≤ 3 Ω (measured according annex D) are tested according table 1		N/A
	Coin cells with internal resistance greater than 3 Ω are not required to be tested.		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 overdischarge protection		N/A
	When conducting the short-circuit test, consideration given to the simulation of any single fault condition that is likely to occur in the protecting circuit that would affect the short-circuit test		N/A
7	Specific requirements and tests		P

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Clause	Requirement + Test	Result - Remark	Verdict
7.0A	The test is performed on the number of cells or batteries specified in Table 1. The test temperature conditions are as specified in each test item in Clause 7. However, these tests may be performed under harsh conditions or methods that make the test results severe. In addition, cells and batteries are tested for each model. However, if a part of the structure of the battery is changed and the test result before the change can be substituted, the test specified in this clause may be omitted.		P
7.1	**Charging procedure for test purposes**		P
7.1.0A	The first procedure and the second procedure are specified as the charging procedure for performing the test. However, these charging procedures do not apply to 7.3.6, 7.3.7, 7.3.8B and 7.3.8D where the charging process is the purpose of the test.		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 have been discharged at 20 °C ± 5 °C at a constant current of 0,2 It A down to a specified final voltage		P
	This charging procedure applies to 7.2.1, 7.2.2, 7.2.2A, 7.3.2, 7.3.3, 7.3.8.1, 7.3.8.2, 7.3.8A and 7.3.8C.		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
	After stabilization for 1 h and 4 h, respectively, at ambient temperature of highest test temperature and lowest test temperature, as specified in Table 2, cells are charged by using the upper limit charging voltage and maximum charging current, until the charging current is reduced to 0,05 It A, using a constant voltage charging method		p
	Upper limit charging voltage:	4.2V	p
	Upper limit test temperature:	60°C	p
	Lower limit test temperature:	0°C	p

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Clause	Requirement + Test	Result - Remark	Verdict
	In case of new application or modification of the upper limit charging voltage, upper limit test temperature or lower limit test temperature, cell manufacturer shall keep the relevant documents according to the procedure specified in Annex A. And the relevant value shall be applied as the upper limit charging voltage, upper limit test temperature or lower limit test temperature.		P
7.2	**Intended use**		P
7.2.1	Continuous charging at constant voltage (cells)		P
	Fully charged cells, according to the first procedure in 7.1.1, are subjected for 28 days to a charge using the upper limit charging voltage and upper limit test temperature.		P
	Results: No fire. No explosion. No leakage.....:		P
7.2.2	Case stress at high ambient temperature (battery)		N/A
	Oven temperature (°C).....:		—
	Results: No physical distortion of the battery case resulting in exposure of internal protective components and cells	(See appended table 7.2.2)	N/A
7.2.2A	Temperature cycle		P
	a) Requirement Repeated exposure of cells and batteries to high and low temperatures shall not cause fire, explosion, or leakage.		P
	b) Test Fully charged cells or batteries, according to the first procedure in 7.1.1, are subjected the temperature cycling of -20°C to 75 °C in the chamber(s), according to following procedure and the temperature profile shown in Figure 0A.		P
	1) cells or batteries are maintained in the ambient temperature of 75 °C ± 2 °C for 4 hours;		P
	2) the ambient temperature is changed to 20 °C ± 5 °C within 30 minutes, and maintain for at least 2 hours;		P
	3) the ambient temperature is changed to -20 °C ± 2 °C within 30 minutes, and maintain for 4 hours;		P
	4) the ambient temperature is changed to 20 °C ± 5 °C within 30 minutes, and maintain for at least 2 hours;		P
	5) The steps from 1) to 4) are as one cycle, and repeat 4 more cycles. The transition time from 4) to 1) is within 30 minutes;		P

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Clause	Requirement + Test	Result - Remark	Verdict
	6) after the 5th cycle, cells or batteries are maintained in the ambient temperature of 20 °C ± 5 °C for 7days, and then checked by visual inspection.		P
	c) Acceptance criteria No fire, no explosion, no leakage	No fire, no explosion, no leakage	P
7.3	**Reasonably foreseeable misuse**		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 80 % 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)		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 80 % of the maximum temperature rise		N/A
	In case of rapid decline in short circuit current, the battery pack remained on test for an additional one hour after the current reached a low end steady state condition		N/A
	A single fault in the discharge protection circuit conducted on one to four (depending upon the protection circuit) of the five samples before conducting the short-circuit test		N/A
	A single fault applies to protective component parts such as MOSFET, fuse, thermostat or positive temperature coefficient (PTC) thermistor		N/A
	Results: No fire. No explosion..... :	(See appended table 7.3.2)	N/A
7.3.3	Free fall		P
	This requirement does not apply to the batteries with a mass exceeding 7 kg or the specially constructed batteries.	Mass not exceeding 7 kg	P
	Results: No fire. No explosion	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

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Clause	Requirement + Test	Result - Remark	Verdict
	- 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..... :		P
7.3.6	Over-charging of battery		N/A
	This requirement does not apply to the specially constructed batteries.		N/A
	The supply voltage which is:		N/A
	- 1,4 times the upper limit charging voltage presented in Table A.1 (but not to exceed 6,0 V) for single cell/cell block batteries or		N/A
	- 1,2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and		N/A
	- Sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached		N/A
	Test was continued until the temperature of the outer casing:		N/A
	- Reached steady state conditions (less than 10 °C change in 30-minute period); or		N/A
	- Returned to ambient		N/A
	Results: No fire. No explosion..... :	(See appended table 7.3.6)	N/A
7.3.7	Forced discharge (cells)		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..... :	No fire. No explosion	P
7.3.8	Mechanical tests (batteries)		N/A
7.3.8.1	Vibration		N/A
	This requirement does not apply to the specially constructed batteries.		N/A
	Results: No fire, no explosion, no rupture, no leakage or venting. ..... :	(See appended table 7.3.8.1)	N/A
7.3.8.2	Mechanical shock		N/A
	This requirement does not apply to the specially constructed batteries.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Results: No leakage, no venting, no rupture, no explosion and no fire ..... :	(See appended table 7.3.8.2)	N/A
7.3.8A	Low pressure (cells)		P
	a) Requirement Low pressure (e.g. in case of air transport) shall not cause leakage, fire or explosion.		P
	b) Test Fully charged cells, according to the first procedure in 7.1.1, are placed in the vacuum chamber at an ambient temperature of 20 °C ± 5 °C. After closing the chamber, the pressure shall be gradually reduced to an internal pressure of 11.6 kPa (equivalent to an altitude of 15 240 m) or less, and kept this pressure for 6 hours. After the test, conduct a visual inspection.		P
	c) Acceptance criteria No fire, no explosion, no leakage.		P
7.3.8B	High rate charge (cells)		P
	a) Requirement Excessive current flow in the batteries with cell connected in parallel as result of battery charger failure shall not cause fire or explosion of cells. In case of the protective device is provided in the devices or batteries which the cell is used, the cell may be tested with the protective device.		P
	b) Test Test is conducted at upper limit test temperature and lower limit test temperature. Discharged cell shall be fully charged at a charging current of 3 times the maximum charging current. In case of the protective device is provided in the corresponding device or battery, and the protective device operate before being fully charged, test is conducted until the protective device operates and interrupts the charging current.		P
	c) Acceptance criteria No fire, no explosion.		P
7.3.8C	Free fall of battery installed in the device (batteries)		N/A
	a) Requirement		N/A
	Free fall with the battery installed in a load equivalent to the maximum mass of the device to which it is installed shall not cause an external short circuit inside the battery, nor shall it cause an internal short circuit in the cells inside the battery.		N/A
	b) Test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Fully charged batteries, according to the first procedure in 7.1.1, are installed in a portable device intended for use or simulated to be installed, and dropped once from the drop test height specified in JIS C 6950-1 or JIS C 6065, depending on the intended use, onto a concrete floor in a direction that is the most adverse effect on the batteries, or subjected to an equivalent load. The floor to drop the batteries can be a metal plate instead of the concrete floor. For test conditions where optional parts can be attached to the device, the test shall be performed with the optional parts specified by the manufacturer that are required for the basic operation of the device (excluding those connected by cords). If there are multiple combinations of optional parts, the test shall be conducted with the combination that gives the most favourable test results.		N/A
	The drop test height is in accordance with 4.2.6 of JIS C 6950-1 and 12.1.5 of JIS C 6065. However, this is not applicable to the devices that the mass of the device with the battery is greater than 7 kg for portable devices and 5 kg for desktop devices (excluding the device may be portable).		N/A
7.3.8D	Protection against overcharge (batteries)		N/A
	a) Requirement The charge voltage of a cell or a cell block with cells connected in parallel in a battery shall not exceed the upper limit charging voltage specified in Table 2, regardless of the parameter measurement tolerances. This test is not applicable where the device or other controls the charging voltage so that it does not exceed the upper limit charging voltage.		N/A
	b) Test The test is conducted at an ambient temperature of 20 °C ± 5 °C by one of the methods of following 1) to 3). The examples of circuit configuration of the test for over charge protection are shown in Figure 1A. However, since this circuit configuration is only an example, the actual test may be conducted with the test method determined in advance between the battery manufacturer and the testing engineer. The purpose of this test is to verify that adequate overcharge protection is provided as a control for the battery, and the overcharge protection may be provided in the battery or in the device in which the battery is installed or the battery charger.	Test complied.	N/A
	1) For the battery consists of a single cell or a single cell block, the voltage applied to the cell or cell block during charging is measured.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	2) For the battery consists of two or more cells or cell blocks connected in series, charging is performed while measuring the voltage of each cell or cell block, and at the same time a single cell or cell block is gradually forced to discharge, and the voltage of each other cell or cell block is measured.		N/A
	3) For the battery consists of two or more cells or cell blocks connected in series, the voltage is applied to a single cell or cell block until the upper charging voltage in Table 2 is exceeded while measuring the voltage of each cell or cell block, and the voltage when charging stops is measured.		N/A
	c) Acceptance criteria The measured voltage shall not exceed the upper limit charging voltage. However, voltage fluctuations (e.g., voltage fluctuations of AC components above 50 kHz assuming ripple, noise, etc.) that are not followed by lithium-ion migration in the battery is excluded.	(See appended table 7.3.8D)	N/A
7.3.9	Design evaluation – Forced internal short-circuit (cells)		P
	This sub-clause is not applicable to coin cells and lithium ion polymer cells.		N/A
	A forced internal short-circuit test for cells shall not cause a fire.		P
	The cells complied with national requirement for .....:	France, Japan, Republic of Korea, Switzerland.	—
	This test shall be carried out until the total number of samples with observed internal short-circuits reaches 5. However, when the number of samples tested reaches 10, the test shall be terminated even if the total number of samples with observed internal short-circuits does not reach 5. For the test each at the upper limit test temperature and lower limit test temperature, 5 to 10 samples each with a nickel particle placed between the positive active material area and the negative active material area shall be prepared. In addition, when aluminium foil of positive electrode is exposed at outer turn and the aluminium foil is facing the coated negative active material, for the test each at the upper limit test temperature and lower limit test temperature, 5 to 10 samples each with a nickel particle placed at that area shall be prepared.		P
	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		P
	Results: No fire ..... :	No fire	P

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Clause	Requirement + Test	Result - Remark	Verdict
8	Information for safety		P
8.1	**General**		P
	Manufacturers of secondary cells ensure that information is provided about current, voltage and temperature limits of their products	Information is mentioned in cell specification.	P
	Manufacturers of batteries ensure that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards		N/A
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		N/A
	As appropriate, any information relating to hazard avoidance resulting from a system analysis provided to the end user		N/A
	Do not allow children to replace batteries without adult supervision		N/A
8.2	**Small cell and battery safety information**	Not small battery.	N/A
	This is not applicable to specially constructed batteries that cannot be removed by user.		N/A
	Equipment using small cells and batteries should be provided with information regarding ingestion hazards.		N/A
	The warning language should be provided with the information packaged with the small cells and batteries, and 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**		P
	Cells marked as specified in JIS C 8711, except coin cells		P
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity		N/A

JIS C 62133-2: 2020			
Clause	Requirement + Test	Result - Remark	Verdict
	By agreement between the cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked		P
	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. However, the cell marking shall be indicated with the battery, the instructions or the specifications.		N/A
9.2	**Battery marking**		N/A
	Batteries marked as specified in JIS C 8711, except for coin batteries		N/A
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity. Batteries also marked with an appropriate caution statement		N/A
	Terminals have clear polarity marking on the external surface of the battery		N/A
	Batteries with keyed external connectors designed for connection to specific end products need not be marked with polarity markings if the design of the external connector prevents reverse polarity connections		N/A
9.3	**Caution for ingestion of small cells and batteries**	Not small battery.	N/A
	Coin cells and batteries identified as small batteries according to 8.2 include a caution statement regarding the hazards of ingestion in accordance with 8.2		N/A
	When small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion given on the immediate package		N/A
9.4	**Other information**		P
	Storage and disposal instructions	Information is mentioned in cell specification.	P
	Recommended charging instructions	Information is mentioned in cell specification.	P
10	Packaging and transport		P
	Packaging for coin cells and small batteries not small enough to fit within the limits of the ingestion gauge of Figure 3		N/A
	The materials and packaging design are chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants		P

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Clause	Requirement + Test	Result - Remark	Verdict
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**		P
A.3	**Consideration on charging voltage**		P
A.3.1	General		P
A.3.2	Upper limit charging voltage		P
A.3.2.1	General		P
A.3.2.2	Explanation of safety viewpoint		P
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied		P
A.4	**Consideration of temperature and charging current**		P
A.4.1	General		P
A.4.2	Recommended temperature range		P
A.4.2.1	General		P
A.4.2.2	Safety consideration when a different recommended temperature range is applied		P
A.4.3	High temperature range		P
A.4.3.1	General		P
A.4.3.2	Explanation of safety viewpoint		P
A.4.3.3	Safety considerations when specifying charging conditions in the high temperature range		P
A.4.3.4	Safety considerations when specifying a new upper limit in the high temperature range		P
A.4.4	Low temperature range		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		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

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Clause	Requirement + Test	Result - Remark	Verdict
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 lithium ion secondary cell		N/A
A.6	**Experimental procedure of the forced internal short-circuit test**		P
A.6.1	Material and tools for preparation of nickel particle		P
A.6.2	Example of a nickel particle preparation procedure		P
A.6.3	Positioning (or placement) of a nickel particle		P
A.6.4	Damaged separator precaution		P
A.6.5	Caution for rewinding separator and electrode		P
A.6.6	Insulation film for preventing short-circuit		P
A.6.7	Caution when disassembling a cell		P
A.6.8	Protective equipment for safety		P
A.6.9	Caution in the case of fire during disassembling		P
A.6.10	Caution for the disassembling process and pressing the electrode core		P
A.6.11	Recommended specifications for the pressing device		P
Annex B	Recommendations to equipment manufacturers and battery assemblers		P
Annex C	Recommendations to the end-users		N/A
Annex D	Measurement of the internal AC resistance for coin cells		N/A
D.1	**General**		N/A
D.2	**Method**		N/A
	A sample size of three coin cells is required for this measurement..... :	Not coin cell	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

JIS C 62133-2: 2020			
Clause	Requirement + Test	Result - Remark	Verdict
	Coin cells with an internal resistance greater than 3 Ω require no further testing		N/A
Annex E	Packaging and transport		**P**
Annex F	Component standards references		**N/A**

JIS C 62133-2: 2020			
Clause	Requirement + Test	Result - Remark	Verdict

	TABLE: Critical components information				P
Object / part No.	**Manufacturer / trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
Cell	Jiangsu Reliance Energy Tech Co., Ltd.	INR21700-RS50	3.6V 5000mAh	JIS C 62133-2: 2020	Tested with appliance
-Case	-[2)]	-[2)]	Ni-coated steel plate [2)]	JIS C 62133-2: 2020	Tested with appliance
- Positive electrode tab	-[2)]	-[2)]	Aluminum [2)]	JIS C 62133-2: 2020	Tested with appliance
- Negative electrode tab	-[2)]	-[2)]	Copper [2)]	JIS C 62133-2: 2020	Tested with appliance
-Electrolyte	-[2)]	-[2)]	LiPF6 [2)]	JIS C 62133-2: 2020	Tested with appliance
-Separator	-[2)]	-[2)]	PE+Ceramic, shutdown temperature: 140°C ~ 150°C [2)]	JIS C 62133-2: 2020	Tested with appliance
-Negative electrode	-[2)]	-[2)]	Si-based Graphite [2)]	JIS C 62133-2: 2020	Tested with appliance
-Positive electrode	-[2)]	-[2)]	LiNixCoyAl1-x-yO2 [2)]	JIS C 62133-2: 2020	Tested with appliance

Supplementary information:

1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.
2) According to the customer requirement some information do not showing in the report.

JIS C 62133-2: 2020			
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**
1	4.2	2	4.19	P
2			4.19	P
3			4.19	P
4			4.19	P
5			4.19	P

Supplementary information:

- No fire or explosion
- No leakage
- Others (please explain)

7.2.2	TABLE: Battery case stress at high ambient temperature (secondary batteries)			N/A
Sample no.	**Recommended charging voltage Vc (Vdc)**	**Recommended charging current I_{rec} (A)**	**OCV before test (Vdc)**	**Results**

Supplementary information:

- No physical distortion of the battery case resulting in exposure of internal components

7.2.2A	TABLE: Temperature cycle			P
Sample no.	**Recommended charging voltage Vc (Vdc)**	**Recommended charging current I_{rec} (A)**	**OCV before test (Vdc)**	**Results**
1	4.2	2.5	4.19	P
2			4.19	P
3			4.19	P
4			4.19	P
5			4.19	P

Supplementary information:

- No fire or explosion
- No leakage

JIS C 62133-2: 2020			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.1	TABLE: External short-circuit (cell)				P
Sample no.	**Ambient T (°C)**	**OCV before test (Vdc)**	**Resistance of circuit (mΩ)**	**Maximum case temperature rise ~~ΔT~~ (°C)**	**Results**
Samples charged at charging temperature upper limit					
1	55	4.19	78	93	P
2		4.19	78	94	P
3		4.19	81	92	P
4		4.19	81	94	P
5		4.19	82	93	P
Samples charged at charging temperature lower limit					
6	55	4.16	78	90	P
7		4.16	78	91	P
8		4.16	81	90	P
9		4.16	81	89	P
10		4.16	82	88	P

Supplementary information:

- No fire or explosion
- Others (please explain)

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 (°C)**	**Component single fault condition**	**Results**

Supplementary information:

- No fire or explosion
- Others (please explain)

JIS C 62133-2: 2020			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.5	TABLE: Crush (cells)			P
Sample no.	**OCV before test (Vdc)**	**OCV at removal of crushing force (Vdc)**	**Maximum force applied to the cell during crush (kN)**	**Results**
Samples charged at charging temperature upper limit				
1	4.19	4.19	13.0	P
2	4.19	4.16		P
3	4.19	4.19		P
4	4.19	4.19		P
5	4.19	4.19		P
Samples charged at charging temperature lower limit				
6	4.16	4.16	13.0	P
7	4.16	4.16		P
8	4.16	4.16		P
9	4.16	4.16		P
10	4.16	4.16		P

Supplementary information:

- No fire or explosion
- Others (please explain)

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

Supplementary information:

- No fire or explosion
- Others (please explain)

JIS C 62133-2: 2020			
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
1	2.68	5	2.5	P
2	2.60			P
3	2.78			P
4	2.70			P
5	2.71			P

Supplementary information:

- No fire or explosion
- Others (please explain)

7.3.8.1	TABLE: Mechanical tests (batteries) - Vibration	N/A

Sample no.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results

Supplementary information:

- No fire or explosion
- No rupture
- No leakage
- No venting
- Others (please explain)

JIS C 62133-2: 2020			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.8.2	TABLE: Mechanical tests (batteries) - Mechanical shock				N/A
Sample no.	**OCV before test (Vdc)**	**OCV after test (Vdc)**	**Mass before test (g)**	**Mass after test (g)**	**Results**

Supplementary information:

- No fire or explosion
- No rupture
- No leakage
- No venting
- Others (please explain)

7.3.8D	TABLE: Overcharge protection (secondary batteries)			N/A
Sample no.	**Recommended charging voltage Vc (Vdc)**	**Recommended charging current I_{rec} (A)**	**Maximum Measured Voltage of Cell (Vdc)**	**Results**

Supplementary information:

- No fire or explosion
- No leakage

JIS C 62133-2: 2020			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.9	TABLE: Forced internal short circuit (cells)				N/A
Sample no.	**Chamber ambient T (°C)**	**OCV before test (Vdc)**	**Particle location [1)]**	**Maximum applied pressure (N)**	**Results**
Samples charged at charging temperature upper limit					
1	60	4.19	1	800	P
2		4.19	1	800	P
3		4.19	1	800	P
4		4.19	1	800	P
5		4.19	1	800	P
Samples charged at charging temperature lower limit					
6	0	4.16	1	800	P
7		4.16	1	800	P
8		4.16	1	800	P
9		4.16	1	800	P
10		4.16	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 or explosion
- Others (please explain)

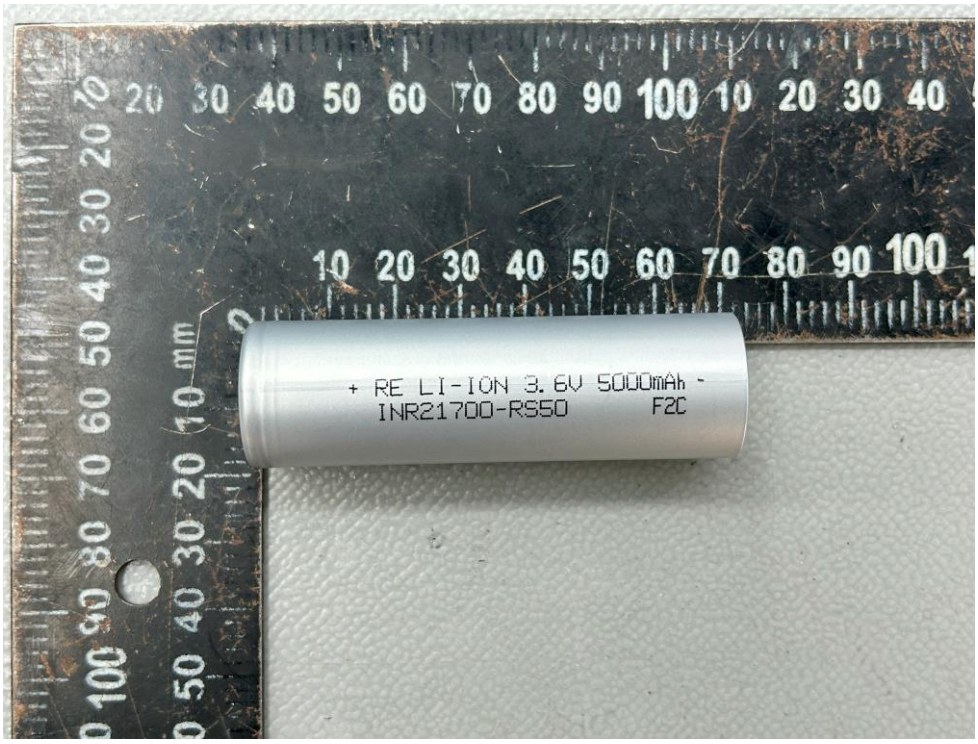
D.2	TABLE: Internal AC resistance for coin cells			N/A
Sample no.	**Ambient T (°C)**	**Store time (h)**	**Resistance Rac (Ω)**	**Results [1)]**

Supplementary information:

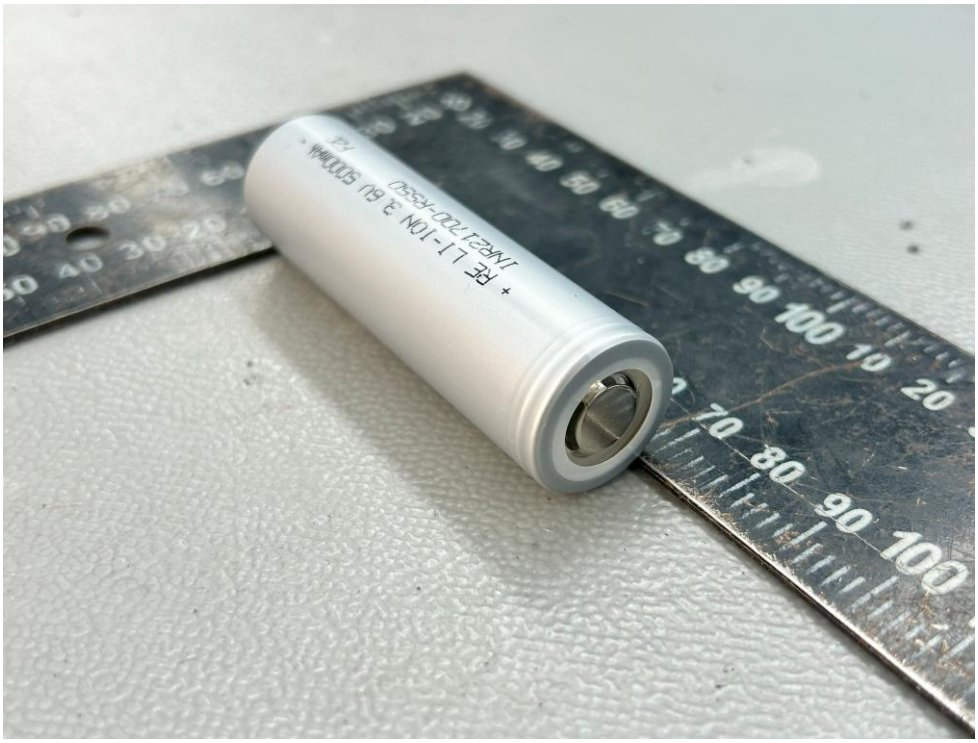
[1)] Coin cells with internal resistance less than or equal to 3 Ω, see test result on corresponding tables

Attachment 1: photo of product

Overall view 1



Overall view 2



Overall view 3