

Test report no.: Prüfbericht-Nr.:	CN2418WO 001	Order No.: Auftragsnr.:	48246475	Page 1 of 27 Seite 1 von 27
Client reference no.: Kunden-Referenz-Nr.:	N/A	Order date: Auftragsdatum:	2024.04.16	
Client: Auftraggeber:	MOLIE QUANTUM ENERGY CORP. No. 16 Changchun St., Xiaogang Dist., Kaohsiung City, 812 Taiwan			
Test item: Prüfgegenstand:	Lithium ion rechargeable cell			
Identification / Type no.: Bezeichnung / Typ-Nr.:	INR-21700-P50B			
Order content: Auftrags-Inhalt:	Test Report			
Test specification Prüfgrundlage:	電気用品の技術上の基準を定める省令の解釈(R06.05.31) 別表第十二 Interpretation for METI Ordinance of Technical Requirements (R06.05.31) Appendix 12, J62133-2(2021) (JIS C 62133-2:2020)			
Date of sample receipt: Wareneingangsdatum:	2024.03.15 & 2024.04.16	See appendix to this report for photo documentation		
Test sample no.: Prüfmuster-Nr.:	A003676341-001 to 045 & A003699113-001 to 046			
Testing period: Prüfzeitraum:	2024.03.18 - 2024.05.21			
Place of testing: Ort der Prüfung:	See Testing Location of test report			
Testing laboratory: Prüflaboratorium:	Taoyuan Testing Laboratories			
Test result*: Prüfergebnis*:	Pass			
tested by: geprüft von:	authorized by: genehmigt von:			
Date: 2024.07.10 Datum:	 Project Engineer Signed by: Nick C. L. Yang	Issue date: 2024.07.10 Ausstellungsdatum:	 Reviewer Signed by: Dennis H. P. Chiu	
Position / Stellung:		Position / Stellung:		
Other: Sonstiges:				
Condition of the test item at delivery: Zustand des Prüfgegenstandes bei Anlieferung:	Test item complete and undamaged Prüfmuster vollständig und unbeschädigt			
* Legend: P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested				
* Legende: P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet				
This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark. Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.				

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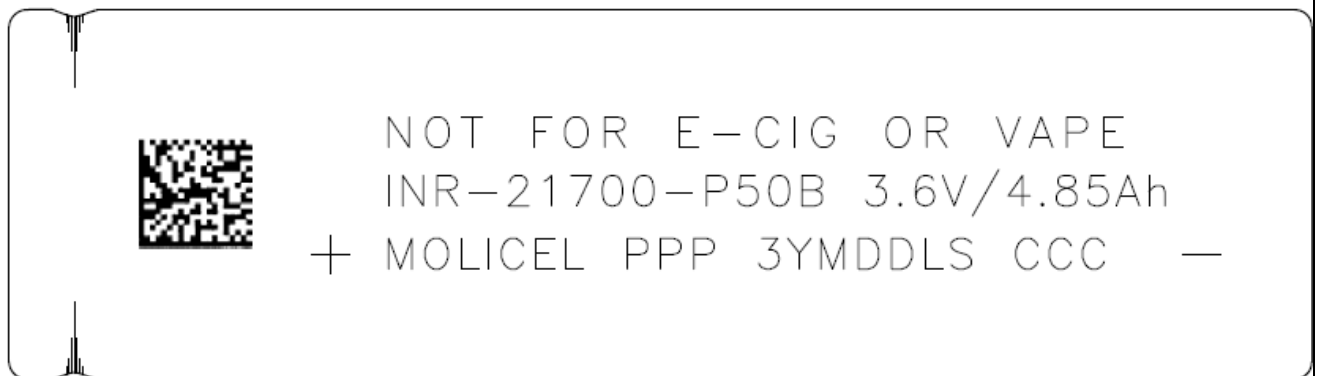
Test report no.: CN24I8WO 001
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Remarks
Anmerkungen

1	<p>Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</p> <p><i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i></p>
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3	<p>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</p> <p><i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i></p>
4	<p>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</p> <p><i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i></p>

Test item description	Lithium ion rechargeable cell
Trade Mark(s)	MOLICEL
Manufacturer	MOLIE QUANTUM ENERGY CORP. No. 16 Changchun St., Xiaogang Dist., Kaohsiung City, 812 Taiwan
Factory	MOLIE QUANTUM ENERGY CORP. No. 16 Changchun St., Xiaogang Dist., Kaohsiung City, 812 Taiwan
Model/Type reference	INR-21700-P50B
Ratings	3.6 V, 5.0 Ah (Typical) / 4.85 Ah (Minimum)

Copy of marking plate:


Date Code

 Dimensional code:  includes (PPP 3YMDDSS)

PPP: the last three digits of part number, ex: 109, 119...et cetera.

XXXXXX: Serial number, 000001~999999.

Cell Date Code: 3YMDDL S

3: indicates Molie Quantum Energy Corp.

Y: indicates calendar year, 9=2009, A=2010, B=2011, C=2012, D=2013, E=2014, F=2015, G=2016, H=2017, I=2018 etc.

M: indicates calendar month, 1~9, 10=A, 11=B, 12=C

DD: indicates calendar date of a month, 01~31

L: Line number; 1, 2...9.

S: indicates the sequence number in a day, 1, 2, 3...A, B, C...X, Y, Z. (I and O will not be use).

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

- Photo Documentation (2 Pages)

Summary of testing:
Tests performed (name of test and test clause):

- 7.1 Charging procedure for test purposes
- 7.2.1 Continuous charging at constant voltage (secondary cells)
- 7.2.2 Battery case stress at high ambient temperature (secondary batteries)
- 7.2.2A Temperature cycle
- 7.3.1 External short-circuit (secondary cells)
- 7.3.2 External short-circuit (secondary batteries)
- 7.3.3 Free fall
- 7.3.4 Thermal abuse (secondary cells)
- 7.3.5 Crush (secondary cells)
- 7.3.6 Overcharge (secondary batteries)
- 7.3.7 Forced discharge (secondary cells)
- 7.3.8.1 Vibration (secondary batteries)
- 7.3.8.2 Mechanical shock (secondary batteries)
- 7.3.8A Low pressure (secondary cells)
- 7.3.8B High-rate charge (secondary cells)
- 7.3.8C Falling of secondary battery installed in a device (secondary batteries)
- 7.3.8D Overcharge protection (secondary batteries)
- 7.3.9 Forced internal short-circuit (secondary cells)

Select the test(s) to be done.

Testing location:

TÜV Rheinland Taiwan Ltd., Taoyuan Testing Laboratories
 4F-1, No. 38, Huaya 1st Road, Guishan District,
 Taoyuan City 333, Taiwan

Test item particulars	
Classification of installation and use	To be defined in final product
Supply connection.....	Electrode tab
Recommend charging method declared by the manufacturer	Charging the battery with 5.0 A constant current until 4.2 V, then constant voltage until charge current reduces to 50 mA or charge 1.5 hours at ambient 23°C±2°C.
Discharge current (0,2 I_t A)	See General product information for details
End-of-discharge voltage.....	See General product information for details
Upper limit charging voltage per cell.....	See General product information for details
Maximum charging current	See General product information for details
Cell upper limit test temperature (T₃).....	See General product information for details
Cell lower limit test temperature (T₂)	See General product information for details
Cell upper limit charging temperature (T₄).....	N/A
Cell lower limit charging temperature (T₁)	N/A
Charging temperature range of battery.....	N/A
Polymer cell electrolyte type.....	<input type="checkbox"/> gel polymer <input type="checkbox"/> solid polymer <input checked="" type="checkbox"/> N/A
Possible test case verdicts:	
- test case does not apply to the test object.....	N/A
- test object does meet the requirement.....	P (Pass)
- test object does not meet the requirement.....	F (Fail)

General product information:
Product specification:

Item	Specification
Nominal voltage (V)	3.6
Rated capacity (mAh)	4850
Typical capacity (mAh):	5000
Standard charging Voltage (V)	4.2
Maximum Charge Voltage (V)	4.25
Standard charging current (A)	5.0
Maximum charging current (A)	25
Standard discharging current (A)	5.0
Maximum discharging current (A)	60
End-of-discharge Voltage (V)	2.5
Discharge current (0,2 I _t A) (A):	0.97
Upper limit charging voltage per cell (Vdc):	4.25
Charge temperature upper limit of cell (T ₃) (°C):	60
Charge temperature lower limit of cell (T ₂) (°C):	-20
Mass of equipment: (g):	70.0 (Max.)

Structural differences:

There are two type constructions provided. The EUT information and specifications are identical except for thermoplastic film.

J62133-2 (2021) (JISC 62133-2:2020)			
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 intended use		N/A
5.3	Venting	See below.	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	Compliance checked.	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
	Secondary batteries are designed such that abnormal temperature rise conditions are prevented		N/A
	Secondary batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer		N/A
	The cell manufacturer are provided the information of temperature, voltage and current limits to the battery manufacturer		N/A
	The battery manufacturer are provided the information of temperature, voltage and current limits to the equipment manufacturer		N/A
5.5	Terminal contacts		P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current	Compliance checked.	P

J62133-2 (2021) (JISC 62133-2:2020)			
Clause	Requirement + Test	Result - Remark	Verdict
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance	Shall be considered in battery pack.	N/A
	Terminal contacts are arranged to minimize the risk of short circuits		P
5.6	Assembly of cells into batteries		P
5.6.1	General		N/A
	Each secondary battery have an independent control and protection for current, voltage, temperature and any other parameter required for safety and to maintain the cells within their operating region		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 secondary 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 secondary battery housed in a single battery case, each secondary 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
	Secondary 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		N/A
	For the secondary battery consisting of a single secondary 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

J62133-2 (2021) (JISC 62133-2:2020)			
Clause	Requirement + Test	Result - Remark	Verdict
	For the secondary 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 secondary 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 secondary batteries consisting of series-connected cells or cell blocks, nominal charge voltage are not counted as an overcharge protection		N/A
	For secondary 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 secondary cells and cell blocks are not discharged beyond the cell manufacturer's specified final voltage		N/A
	For secondary batteries consisting of series-connected secondary cells or cell blocks, cell balancing circuitry are incorporated into the battery management system		N/A
5.6.3	Mechanical protection for secondary cells and components of secondary batteries		N/A
	Mechanical protection for secondary cells, cell connections and control circuits within the secondary 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 secondary 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
5.6.3A	Prevention for sharp corner hazard		P

J62133-2 (2021) (JISC 62133-2:2020)			
Clause	Requirement + Test	Result - Remark	Verdict
	Except in the case of necessary function, concavo-convex or sharp corner not exist to cause hazards for cell or battery.		N/A
	When the corner exist on the cell or battery enclosure or connection parts, mechanical protection provided to prevent user contact.		N/A
	For cell or battery not intended to be handled by end user, the protection applied can be decided by agreement between the cell manufacturer and the battery and/or end product manufacturer, Conformity is checked by inspection.	Build-in battery cell, not intended to be handled by end user, the protection applied is decided by agreement between the cell manufacturer and the battery and/or end product manufacturer.	P
5.7	Quality plan		P
	The cell and battery manufacturer prepares and implements a quality plan that defines procedures for the inspection of materials, components, secondary cells and batteries and which covers the whole process of producing each type of secondary cell or battery. The cell and battery manufacturers should understand their process capabilities and should institute the necessary process controls as they relate to product safety.	Complied. ISO 9001: 2015 certificate provided.	P
5.8	Battery safety components		N/A
6	TYPE TEST AND SAMPLE SIZE		P
	Tests are made with the number of secondary cells or batteries specified in Table 1 using secondary 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. No test is required for coin cells with internal resistance greater than 3 Ω	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		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	See clause 7.3.2	N/A
7	SPECIFIC REQUIREMENTS AND TESTS		P
7.0A	General		P
7.1	Charging procedure for test purposes		P

J62133-2 (2021) (JISC 62133-2:2020)			
Clause	Requirement + Test	Result - Remark	Verdict
7.1.0A	The first and second procedures are specified as charging procedures for tests. These charging procedures, however, 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
	Unless otherwise specified in this Standard, the secondary cells and batteries shall be charged in an ambient temperature of 20 °C ± 5 °C, using the method declared by the manufacturer.	Considered.	P
	Prior to charging, the secondary cell and battery shall have been discharged at an ambient temperature of 20 °C ± 5 °C at a constant current of 0.2 It A down to the designed final voltage specified by the manufacturer.	Considered.	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	Considered.	P
7.1.2	Second procedure		P
	After stabilization for 1 h and 4 h, respectively, at ambient temperature of upper limit test temperature and lower limit 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 at the time of constant voltage charge control is reduced to 0.05 It A.		P
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9	Considered.	P
7.2	Intended use		P
7.2.1	Continuous charging at constant voltage (secondary cells)	Tested and complied.	P
	Fully charged secondary cells, according to the first procedure in 7.1.1, are subjected for 28 days to a charge at upper limit charging voltage and upper limit test temperature. After the test, visual inspection shall be performed.		P
	Results: No fire. No explosion. No leakage..... :	(See appended table 7.2.1)	P
7.2.2	Battery case stress at high ambient temperature (secondary batteries)		N/A
	Fully charged secondary batteries, according to the first procedure in 7.1.1, are exposed to a high temperature. The secondary battery is placed in an air circulating oven at a temperature of 70 °C ± 2 °C. The batteries remain in the oven for 7 h, after which they are removed and allowed to return to an ambient temperature of 20 °C ± 5 °C.		N/A
	Oven temperature (°C)..... :		—

J62133-2 (2021) (JISC 62133-2:2020)			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No physical distortion of the battery casing resulting in exposure if internal components		N/A
7.2.2A	Temperature cycle	Tested and complied.	P
	<p>Fully charged secondary cells or batteries, according to the first procedure in 7.1.1, are subjected to temperature cycling (-20 °C, $+75\text{ °C}$), in forced draught chambers, according to the following procedure and the temperature profile shown in Figure 0A.</p> <p>Step 1: Place the secondary cells or batteries in an temperature of $75\text{ °C} \pm 2\text{ °C}$ for 4 h.</p> <p>Step 2: Change the temperature to $20\text{ °C} \pm 5\text{ °C}$ within 30 min and maintain at this temperature for not less than 2 h.</p> <p>Step 3: Change the temperature to $-20\text{ °C} \pm 2\text{ °C}$ within 30 min and maintain at this temperature for 4 h.</p> <p>Step 4: Change the temperature to $20\text{ °C} \pm 5\text{ °C}$ within 30 min and maintain at this temperature for not less than 2 h.</p> <p>Step 5: Repeat Steps 1 to 4 for a further four cycles. Transition from Step 4 to Step 1 within 30 min.</p> <p>Step 6: After the fifth cycle, store the secondary cells or batteries at $20\text{ °C} \pm 5\text{ °C}$ for 7 days and then conduct a visual inspection.</p>		P
	Results: 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 (secondary cells)	Tested and complied.	P
	Charging procedure: 7.1.2		P
	Ambient temperature: $55\text{ °C} \pm 5\text{ °C}$	(See appended Table 7.3.1)	P
	Resistance of circuit (mΩ): $80\text{ m}\Omega \pm 20\text{ m}\Omega$	(See appended Table 7.3.1)	P
	The cells were tested until one of the following occurred: - 24 hours elapsed; or		N/A
	- The case temperature declined by <u>80 % (down to 20 %)</u> of the maximum temperature rise		P
	Results: No fire. No explosion..... :	(See appended Table 7.3.1)	P
7.3.2	External short-circuit (secondary batteries)		N/A
	Charging procedure: 7.1.1		N/A
	Ambient temperature: $20\text{ °C} \pm 5\text{ °C}$	(See appended table 7.3.2)	N/A
	Resistance of circuit (mΩ): $80\text{ m}\Omega \pm 20\text{ m}\Omega$	(See appended table 7.3.2)	N/A
	The batteries were tested until one of the following occurred:		N/A

J62133-2 (2021) (JISC 62133-2:2020)			
Clause	Requirement + Test	Result - Remark	Verdict
	- 24 hours elapsed; or		N/A
	- The case temperature declined by <u>80 % (down to 20 %)</u> 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
	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..... :	(See appended table 7.3.2)	N/A
7.3.3	Free fall	Tested and complied.	P
	Fully charged secondary cells or batteries, according to the first procedure in 7.1.1, are stored in an ambient temperature of 20 °C ± 5 °C. Each secondary cell or battery is dropped three times from a height of 1.0 m ± 0.01 m onto a flat concrete floor or metal floor. The cells or batteries are dropped so as to obtain impacts in random orientations. After the test, the secondary cell or battery shall be put on rest for a minimum of 1 h and then a visual inspection shall be performed.		P
	Results: No fire. No explosion.	No fire. No explosion.	P
7.3.4	Thermal abuse (secondary cells)	Tested and complied.	P
	Oven temperature (°C)..... :	130 ± 2	—
	Results: No fire. No explosion.	No fire. No explosion.	P
7.3.5	Crush (secondary cells)	Tested and 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
	A cylindrical or prismatic secondary lithium cell is crushed with its longitudinal axis parallel to the flat surfaces of the crushing apparatus. Test only the wide side of prismatic secondary lithium cells. A coin cell shall be crushed by applying the force on its flat surface.	Cylindrical cell.	P
	Results: No fire. No explosion..... :	(See appended table 7.3.5)	P
7.3.6	Overcharge (secondary batteries)		N/A

J62133-2 (2021) (JISC 62133-2:2020)			
Clause	Requirement + Test	Result - Remark	Verdict
	The test shall be carried out in an ambient temperature of 20 °C ± 5 °C. Each secondary battery shall be discharged at a constant current of 0.2 It A, to the designed final voltage specified by the manufacturer.		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 (secondary cells)	Tested and complied.	P
	A secondary cell is discharged to the designed final voltage specified by the cell manufacturer.		P
	The discharged cell is then subjected to a reverse charge at 1 It A for 90 min.		P
	- 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		P
	- The discharge voltage does not reach the negative value of upper limit charging voltage within the testing duration. The test is terminated at the end of the testing duration		N/A
	Results: No fire. No explosion..... :	(See appended table 7.3.7)	P
7.3.8	Mechanical tests (secondary batteries)		N/A
7.3.8.1	Vibration (secondary batteries)		N/A
	Results: no fire, no explosion or no leakage. :	(See appended table 7.3.8.1)	N/A
7.3.8.2	Mechanical shock (secondary batteries)		N/A
	Results: No fire, no explosion or no leakage..... :	(See appended table 7.3.8.2)	N/A
7.3.8A	Low pressure (secondary cells)	Tested and complied.	P
	Charging procedure: 7.1.1		P

J62133-2 (2021) (JISC 62133-2:2020)			
Clause	Requirement + Test	Result - Remark	Verdict
	Ambient temperature: 20 °C ± 5 °C.		P
	Air pressure : equal to or less than 11.6 kPa (simulates an altitude of 15 240 m)		P
	Duration: 6 h.		P
	Results: No fire, no explosion or no leakage..... :	No fire. No explosion. No leakage	P
7.3.8B	High-rate charge (secondary cells)	Tested and complied.	P
	The test shall be performed at upper limit test temperature or lower limit test temperature.		P
	When the discharged secondary cell is fully charged with the charging current of three times the maximum charging current or when the corresponding electronic device or secondary battery before full charge has a protection element, charging shall be performed until charging current is broken by the actuation of the safety device of the protection element.	Charged until the cell is fully charged.	P
	Results: No fire, no explosion :	No fire, no explosion.	P
7.3.8C	Falling of secondary battery installed in a device (secondary batteries)		N/A
	Battery equipped with Device is tested.		N/A
	The battery that is charged according to 7.1.1 is installed in the portable electronic application to be used, or subjected to the condition, simulating the actual use. Then, it is dropped once in the direction most likely to affect in a negative manner from the height, which is specified in JIS C 6950 or JIS C6065, according to the portable electronic applications, in which there batteries are assumed to be installed, on to a concrete floor. An iron plate may be used in place of the concrete floor.		N/A
	Requirement: External short circuit shall not be caused inside of the battery, and internal short circuit shall not be caused in cells contained in the battery.	No external short circuit or internal short circuit occurs.	N/A
7.3.8D	Overcharge protection (secondary batteries)		N/A
	Ambient temperature: 20 °C ± 5°C		N/A
	One of the following test is conducted		N/A
	a) When the secondary battery consists of secondary cells or one step of cell block, measure the voltage applied to the secondary cells or the cell block at the time of charge.		N/A

J62133-2 (2021) (JISC 62133-2:2020)			
Clause	Requirement + Test	Result - Remark	Verdict
	2) In the case of the structure of the secondary battery in which two or more secondary cells or cell blocks are connected in series, charge while measuring the voltage of each secondary cell or cell block. At the same time, discharge single secondary cell or cell block gradually and compulsorily, and measure the voltage of each secondary cell or cell block of others.		N/A
	3) In the case of the structure of the secondary battery in which two or more secondary cells or cell blocks are connected in series, apply the voltage which exceeds the upper limit charging voltage in Table 2 to the secondary cell or cell block while measuring the voltage of each secondary cell or cell block, and measure the voltage when charge stops		N/A
	The battery provides with protective circuits		N/A
	Appliance in which battery is installed or battery charger provides with protective circuits.		N/A
	Requirement: cells or cellblocks shall not exceed upper limit charging voltage.		N/A
7.3.9	Forced internal short-circuit (secondary cells)	Tested and complied.	P
	The pressing was stopped upon:		P
	- A voltage drop of 50 mV has been detected; or		P
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached	The pressing force of 800 N has been reached	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		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
8.2	Small cell and battery safety information		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The following warning language is to 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	Secondary cell marking		P
	Secondary cells are marked as specified in JIS C 8711, 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 secondary cell manufacturer and the battery and/or end product manufacturer, component secondary cells used in the manufacture of a battery need not be marked	See copy of marking plate. However, cells used in the manufacture of a battery need not be marked.	P
	However, when component secondary cells are not marked, the secondary cell marking are indicated with the secondary battery, the instructions or the specifications.	Build-in battery cell, to be evaluated in final system.	N/A
9.2	Secondary battery marking		N/A
	Secondary batteries are 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		N/A
	Secondary 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 secondary cells and batteries	Not small secondary cells and batteries.	N/A
	Small secondary cells and batteries determined to be small according to 8.2 are included a caution statement regarding the hazards of ingestion in accordance with 8.2.		N/A

J62133-2 (2021) (JISC 62133-2:2020)			
Clause	Requirement + Test	Result - Remark	Verdict
	Small secondary cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion is given on the immediate package		N/A
9.4	Other information		P
	The following information are marked on the secondary battery or supplied to the equipment manufacturer by the battery manufacturer :		P
	- Storage and disposal instructions	Information for storage and disposal instructions mentioned in manufacturer's specifications.	P
	- Recommended charging instructions	Information for recommended charging instructions mentioned in manufacturer's specifications.	P

10	PACKAGING AND TRANSPORT		P
	Packaging for coin cells and small secondary batteries 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	See Page 7 for detail	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	See Page 7 for detail	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	See Page 7 for detail	P
A.4.3	High temperature range	See Page 7 for detail	P
A.4.3.1	General		P
A.4.3.2	Explanation of safety viewpoint		P

J62133-2 (2021) (JISC 62133-2:2020)			
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	Considered	P
A.4.4	Low temperature range	See Page 7 for detail	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		N/A
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range	Considered	P
A.4.5	Scope of the application of charging current		P
A.4.5.A	Determination of model adoption		P
A.4.6	Consideration of discharge		P
A.4.6.1	General		P
A.4.6.2	Final voltage and explanation of safety viewpoint	See Page 7 for detail	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	Considered	P
A.5.1	General		P
A.5.2	Insertion procedure for nickel particle to generate internal short-circuit		P
A.5.3	Disassembly of charged cell		P
A.5.4	Shape and material of nickel particle		P
A.5.5	Insertion of nickel particle in cylindrical lithium ion secondary 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	Considered	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

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Clause	Requirement + Test	Result - Remark	Verdict
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		N/A
	Coin cells with an internal resistance greater than 3 Ω require no further testing	(See appended table D.2)	N/A
	Coin cells with an internal resistance less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1		N/A
ANNEX E	PACKAGING AND TRANSPORT		P
ANNEX F	COMPONENT STANDARDS REFERENCES		N/A

J62133-2 (2021) (JISC 62133-2:2020)			
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Clause	Requirement + Test	Result - Remark	Verdict
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7.2.1	TABLE: Continuous charging at constant voltage (secondary cells)			P
Sample No.	Upper limit charging voltage V _c , (Vdc)	Upper limit test temperature, (T ₃ , °C)	OCV at start of test, (Vdc)	Results
A003699113-040	4.25	60.4	4.25	See below
A003699113-041	4.25	60.4	4.25	See below
A003699113-042	4.25	60.4	4.25	See below
A003699113-043	4.25	60.4	4.25	See below
A003699113-044	4.25	60.4	4.25	See below
Supplementary information:				
- No fire or explosion - No leakage				

7.3.1	TABLE: External short-circuit (secondary cells)				P
Sample No.	Ambient, (°C)	OCV at start of test, (Vdc)	Resistance of circuit, (mΩ)	Maximum case temperature (°C)	Results
Samples charged at upper limit test temperature (60°C)					
A003676341-016	55.0	4.16	86.8	45.9	See below
A003676341-017	55.0	4.16	88.4	57.0	See below
A003676341-018	55.0	4.16	93.0	44.0	See below
A003676341-019	55.0	4.16	81.3	51.6	See below
A003676341-020	55.0	4.16	86.7	29.1	See below
Samples charged at lower limit test temperature (-20°C)					
A003676341-031	55.3	4.11	86.8	64.6	See below
A003676341-032	55.3	4.11	88.4	59.8	See below
A003676341-033	55.3	4.12	93.0	58.8	See below
A003676341-034	55.3	4.12	81.3	54.5	See below
A003676341-035	55.3	4.10	86.7	30.2	See below
Supplementary information:					
- No fire or explosion					

7.3.2	TABLE: External short-circuit (secondary batteries)			N/A
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J62133-2 (2021) (JISC 62133-2:2020)						
Clause	Requirement + Test				Result - Remark	Verdict
Sample No.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (°C)	Component single fault condition	Results
Supplementary information:						
- No fire or explosion						

7.3.5	TABLE: Crush (secondary 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 upper limit test temperature (60°C)					
A003676341-011	4.16	4.15	13.1	See below	
A003676341-012	4.16	4.15	13.1	See below	
A003676341-013	4.16	4.15	13.1	See below	
A003676341-014	4.16	4.15	13.1	See below	
A003676341-015	4.16	4.15	13.1	See below	
Samples charged at lower limit test temperature (-20°C)					
A003676341-026	4.11	4.11	12.8	See below	
A003676341-027	4.11	4.10	12.4	See below	
A003676341-028	4.11	4.10	12.6	See below	
A003676341-029	4.10	4.10	12.6	See below	
A003676341-030	4.11	4.11	12.6	See below	
Supplementary information:					
- No fire or explosion					

7.3.6	TABLE: Overcharge (secondary batteries)				N/A
Constant charging current (A)					—
Supply voltage (Vdc)					—
Sample No.	OCV before charging, (Vdc)	Total charging time (minute)	Maximum outer casing temperature, (°C)	Results	

J62133-2 (2021) (JISC 62133-2:2020)				
Clause	Requirement + Test	Result - Remark	Verdict	
Supplementary information: - No fire or explosion				

7.3.7	TABLE: Forced discharge (secondary cells)				P
Sample No.	OCV before application of reverse charge (Vdc)	Measured reverse charge I_r (A)	End-of-discharge voltage (Vdc)	Results	
A003676341-036	2.81	5	2.5	See below	
A003676341-037	2.81	5	2.5	See below	
A003676341-038	2.81	5	2.5	See below	
A003676341-039	2.81	5	2.5	See below	
A003676341-040	2.81	5	2.5	See below	
Supplementary information: - No fire or explosion					

7.3.8.1	TABLE: Vibration (secondary batteries)					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, no explosion or no leakage.						

7.3.8.2	TABLE: Mechanical shock (secondary batteries)					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, no explosion or no leakage.						

J62133-2 (2021) (JISC 62133-2:2020)				
Clause	Requirement + Test	Result - Remark		Verdict
7.3.8B	TABLE: High-rate charge (secondary cells)			P
Sample No.	OCV at start of test, (Vdc)	Charging Current, (A)	Maximum Charging Voltage, (Vdc)	Results
Samples charged at upper limit test temperature (60°C)				
A003699113-027	2.87	75	4.25	See below
A003699113-032	2.87	75	4.25	See below
A003699113-030	2.87	75	4.25	See below
A003699113-037	2.87	75	4.25	See below
A003699113-031	2.87	75	4.25	See below
Samples charged at lower limit test temperature (-20°C)				
A003699113-036	2.84	75	4.25	See below
A003699113-028	2.84	75	4.25	See below
A003699113-034	2.84	75	4.25	See below
A003699113-038	2.84	75	4.25	See below
A003699113-029	2.84	75	4.25	See below
Supplementary information:				
- No fire or explosion				

7.3.8D	Overcharge protection (secondary batteries)			N/A
Sample No.	OCV at start of test, (Vdc)	OCV at End of test, (Vdc)	Charging Voltage, (Vdc)	Results
Supplementary information:				
The cell block in the battery shall not exceed the upper limited charging voltage of cell.				

7.3.9	TABLE: Forced internal short-circuit (secondary cells)				P
Sample No.	Chamber ambient T (°C)	OCV before test (Vdc)	Particle location ¹⁾	Maximum applied pressure (N)	Results
Samples charged at upper limit test temperature (60°C)					
A003699113-017	60.5	4.15	1	802	See below
A003699113-018	61.0	4.15	1	802	See below
A003699113-020	60.5	4.15	1	802	See below

J62133-2 (2021) (JISC 62133-2:2020)					
Clause	Requirement + Test			Result - Remark	Verdict
A003699113-021	60.8	4.15	1	802	See below
A003699113-022	58.8	4.15	1	802	See below
A003699113-015	60.6	4.17	1	802	See below
A003699113-019	60.4	4.16	1	802	See below
A003699113-033	61.7	4.16	1	802	See below
A003699113-035	61.2	4.17	1	800	See below
A003699113-014	59.6	4.12	1	802	See below
Samples charged at lower limit test temperature (-20°C)					
A003699113-009	-21.6	4.11	1	800	See below
A003699113-016	-20.5	4.11	1	802	See below
A003699113-012	-21.0	4.12	1	802	See below
A003699113-004	-21.3	4.11	1	804	See below
A003699113-013	-21.9	4.10	1	802	See below
A003699113-014	-20.2	4.09	1	802	See below
A003699113-022	-20.9	4.10	1	298 *	See below
A003699113-025	-21.0	4.09	1	214 *	See below
A003699113-026	-18.9	4.10	1	82 *	See below
A003699113-036	-21.0	4.09	1	804	See below
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.					
* The voltage is dropped more than 50 mV.					
Results:					
- No fire					

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Clause	Requirement + Test	Result - Remark	Verdict

D.2	TABLE: Measurement of the internal AC resistance for coin cells			N/A
Sample no.	Ambient T (°C)	Store time (h)	Resistance Rac (Ω)	Results ¹⁾

Supplementary information:

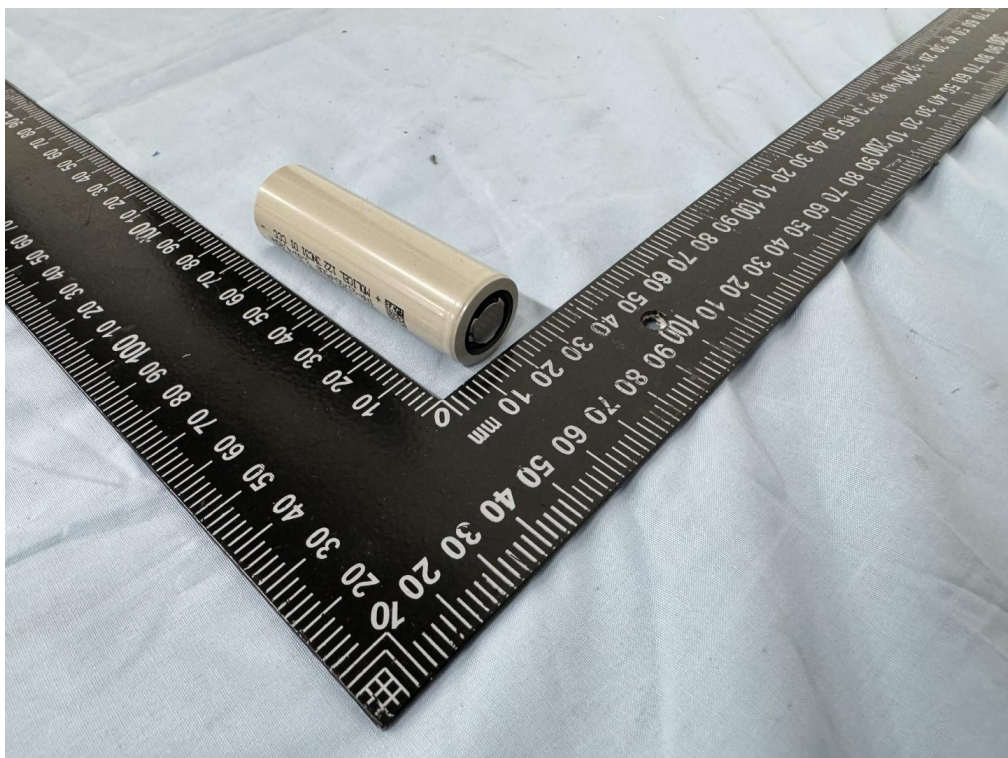
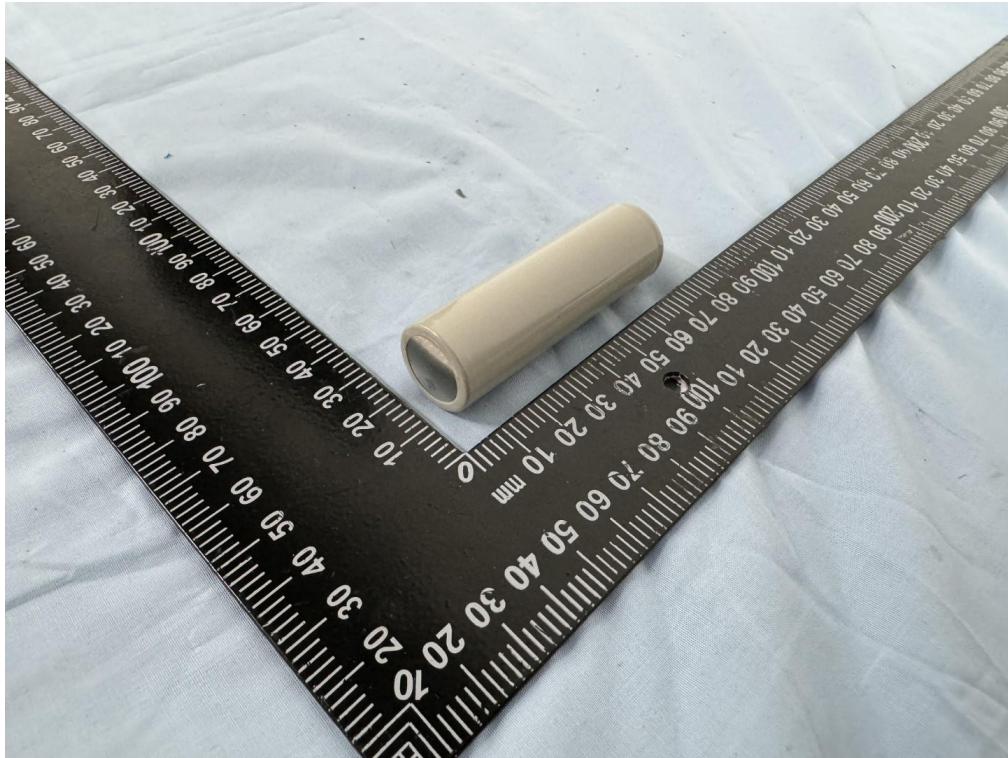
¹⁾ Coin cells with an internal resistance less than or equal to 3 Ω, see test result on corresponding tables according to Clause 6 and Table 1.

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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	Molie Quantum Energy Corp.	920ASCQ52634	Lithium Nickel Cobalt Aluminum Oxide	--	--
Negative Electrode	Molie Quantum Energy Corp.	920ASCR52633	Si-C Composite	--	--
Separator	Sumitomo Chemical Co., Ltd	RL6044	PE/Heat Resistant Layer, Thickness: 12.5µm	--	--
Electrolyte	Zhangjiagang Guotai-Huarong New Chemical materials	EB16	LiPF6 in organic solvents	--	--
Cell Case	Kedali Industry Co., Ltd.	Steel Can pre-coating	Ni plating mild steel	--	--
Thermoplastic film (Optional)	Moodeung Co., Ltd.	PET Heat Shrinkable Tube	min. 125°C, thickness 0.08 mm	--	--
Supplementary information:					
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

-- End of Report --

Product: Lithium ion rechargeable cell

Type Designation: INR-21700-P50B



Product: Lithium ion rechargeable cell

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