

Prüfbericht-Nr.: <i>Test report no.:</i>	50251474 003	Auftrags-Nr.: <i>Order no.:</i>	180236761	Seite 1 von 20 Page 1 of 20
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2022-06-09	
Auftraggeber: <i>Client:</i>	INGCO TOOLS CO., LIMITED No.45 Songbei Road, Suzhou Industrial Park, Jiangsu P.R. China			
Prüfgegenstand: <i>Test item:</i>	Rechargeable Li-ion Battery Pack			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	FBLI2001x, FBLI2001Sy, TFBLI2001x, TFBLI2001Sy, EBPK2001x, EBPKI2001Sy, EBPK20011x, EBPKI20011Sy (x=Blank, A, E, H, M, S, 1, 2, 3, 4, 5, 6, 7, 8, 9, -1, -2, -3, -4, -5, -6, -7, -8, -9; y=1, 2, 3, 4, 5, 6, 7, 8, 9)			
Auftrags-Inhalt: <i>Order content:</i>	Type Test			
Prüfgrundlage: <i>Test specification:</i>	IEC 62133-2:2017 EN 62133-2:2017			
Wareneingangsdatum: <i>Date of sample receipt:</i>	See page 6			
Prüfmuster-Nr.: <i>Test sample no.:</i>	See page 6			
Prüfzeitraum: <i>Testing period:</i>	See page 6			
Ort der Prüfung: <i>Place of testing:</i>	See page 4			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland / CCIC (Ningbo) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	X <u>Ali Shen</u> <small>Signed by: Ali Shen</small>			
Datum: <i>Date:</i>	2022-06-27	Ausstellungsdatum: <i>Issue date:</i>	2022-06-27	
Stellung / Position:	Project Engineer	Stellung / Position:	Reviewer	
Sonstiges / <i>Other:</i>	None			
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
<small>* Legende: P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet</small>				
<small>* 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</small>				
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. <i>This test report only relates to the a. m. 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.</i>				

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Test Report issued under the responsibility of:



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 :	See cover page
Date of issue :	See cover page
Total number of pages	See cover page
Name of Testing Laboratory preparing the Report	TÜV Rheinland / CCIC (Ningbo) Co., Ltd.
Applicant's name	INGCO TOOLS CO., LIMITED
Address :	No.45 Songbei Road, Suzhou Industrial Park, Jiangsu P.R. China
Test specification:	
Standard	IEC 62133-2:2017
Test procedure	Type Test
Non-standard test method	N/A
Test Report Form No.	IEC62133_2A
Test Report Form(s) Originator :	DEKRA
Master TRF	Dated 2017-08-10
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General disclaimer:	
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Test item description	Rechargeable Li-Ion Battery Pack	
Trade Mark	N/A	
Manufacturer	Same as applicant	
Model/Type reference	See cover page	
Ratings	18.5V d.c., Max. 20V, 2.0Ah	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	Testing Laboratory:	TÜV Rheinland / CCIC (Ningbo) Co., Ltd.
	Testing location/ address	3F Building C13, R&D Park, No. 32, Lane 299 Guanghua Road, National Hi-Tech Zone, Ningbo, 315048, P. R. China
	Tested by (name, function, signature)	See cover page
	Approved by (name, function, signature) ...:	See cover page
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
	Testing location/ address	
	Tested by (name, function, signature)	
	Approved by (name, function, signature) ...:	
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
	Testing location/ address	
	Tested by (name + signature)	
	Witnessed by (name, function, signature) .:	
	Approved by (name, function, signature) ...:	
<input type="checkbox"/>	Testing procedure: CTF Stage 3:	
<input type="checkbox"/>	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): N/A	
Summary of testing:	
Tests performed (name of test and test clause): 7.2.2 Case stress 7.3.2 External short-circuit 7.3.3 Free fall 7.3.6 Overcharge 7.3.8.1 Vibration 7.3.8.2 Mechanical shock All test mentioned above were performed on the model FBI2001.	Testing location: For tests of Cl. 7.3.8.1 and Cl. 7.3.8.2: Ningbo Entry-Exit Inspection and Quarantine Bureau Technical Center Building A, No. 66, Qingyi Road, Hi-Tech Distric, Ningbo, Zhejiang, China For other tests: TÜV Rheinland / CCIC (Ningbo) Co., Ltd. 3F Building C13, R&D Park, No. 32, Lane 299 Guanghua Road, National Hi-Tech Zone, Ningbo, 315048, P. R. China
Summary of compliance with National Differences (List of countries addressed): The test of the International Standard IEC 62133:2017-2 was approved by CENELEC as a European Standard without any modification.	

Copy of marking plate:

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



Remark:

For models FBLI2001x, FBLI2001Sy, TFBLI2001x, TFBLI2001Sy, EBPK2001x, EBPKI2001Sy, EBPK20011x, EBPKI20011Sy (x=Blank, A, E, H, M, S, 1, 2, 3, 4, 5, 6, 7, 8, 9, -1, -2, -3, -4, -5, -6, -7, -8, -9; y=1, 2, 3, 4, 5, 6, 7, 8, 9), which rating labels are the same as model FBLI2001 except for the type designation.

Test item particulars	Rechargeable Li-Ion Battery Pack				
Classification of installation and use	Installation and use shall be evaluated in the final application				
Supply Connection	Connected to the battery charger directly.				
Recommend charging method declared by the manufacturer	Specified battery charger				
Discharge current (0,2 It A)	400 mA				
Specified final voltage	21.0V				
Upper limit charging voltage per cell	4.35V				
Maximum charging current	2000A				
Charging temperature upper limit	40 °C				
Charging temperature lower limit	10 °C				
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)				
Testing					
Date of receipt of test item	2019-01-02 (A000920218-001-022)				
Date (s) of performance of tests	2019-05-15 – 2019-05-23				
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 <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.					
Manufacturer's Declaration per sub-clause 4.2.5 of IEC62133-2:					
Name and address of factory (ies)	Same as manufacturer				
General product information and other remarks:					
The main features of the battery pack are shown as below:					
Model	Battery capacity	Recommend ed charging current	Recommend ed charging voltage	Discharg e cut-off voltage	End charging voltage
FBLI2001x, FBLI2001Sy, TFBLI2001x, TFBLI2001Sy, EBPk2001x, EBPkI2001Sy, EBPk20011x, EBPkI20011Sy (x=Blank, A, E, H, M, S, 1, 2, 3, 4, 5, 6, 7, 8, 9, -1, -2, -3, -4, -5, -6, -7, -8, -9; y=1, 2, 3, 4, 5, 6, 7, 8, 9)	2000mAh	2000mA	21V	13.75V	20.75V
5 pieces of battery cell were assembled in serial connection in the battery pack. The cells used in the battery pack were approved according to the standard IEC 62133-2. All the models are the same as each other except for the model name. This full test report is based on and replaced the report 50251474 001-002 and all test data is cited from					

test report 50251474 001.

Amendment 1 report 50251474 002:

As required by the client,

1. Battery pack models FB LI2001x, FB LI2001Sy, TFBI2001x, TFBI2001Sy, EBP K2001x, EBP KI2001Sy, EBP K20011x, EBP KI20011Sy (x=Blank, A, E, H, M, S, 1, 2, 3, 4, 5, 6, 7, 8, 9, -1, -2, -3, -4, -5, -6, -7, -8, -9; y=1, 2, 3, 4, 5, 6, 7, 8, 9), except for models that already exist in 50251474 001, FB LI2001x, TFBI2001x(x=Blank, E, 1, 2, 3, 4, 5, 6, 7, 8, 9) were added in this test report, all the models are the same as each other except for the model name.
2. The rating label for all models was listed as above. Include models that already exist in test report 50251474 001, which rating label were changed as above.

Amendment 2 report 50251474 003:

As required by the client, the rating voltage of battery pack was updated to 18.5V d.c., Max. 20V. Details see the rating label above.

After review, no 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		P
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 MΩ		P
	Insulation resistance (MΩ) :		—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		P
	Orientation of wiring maintains adequate clearance and creepage distances between conductors		P
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		P
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	Approved battery cell	P
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief	No such encapsulation	N/A
5.4	Temperature, voltage and current management		P
	Batteries are designed such that abnormal temperature rise conditions are prevented		P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer		P
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that specified chargers are designed to maintain charging within the temperature, voltage and current limits specified		P
5.5	Terminal contacts		P
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance		P
	Terminal contacts are arranged to minimize the risk of short-circuit		P
5.6	Assembly of cells into batteries		P
5.6.1	General		P
	Each battery have an independent control and protection for current, voltage, temperature and any other parameter required for safety and to maintain the cells within their operating region		P
	This protection may be provided external to the battery such as within the charger or the end devices	The protection of charging is provided by battery charger, and the protection of discharging is provided by the end devices.	P
	If protection is external to the battery, the manufacturer of the battery provide this safety relevant information to the external device manufacturer for implementation		P
	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		P
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate circuitry to prevent operation of cells outside the limits specified by the cell manufacturer		N/A
	Protective circuit components added as appropriate and consideration given to the end-device application		P
	The manufacturer of the battery provide a safety analysis of the battery safety circuitry with a test report including a fault analysis of the protection circuit under both charging and discharging conditions confirming the compliance		P
5.6.2	Design recommendation		P
	For the battery consisting of a single cell or a single cellblock, it is recommended that the charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Table 2		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		P
	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		P
	For batteries consisting of series-connected cells or cell blocks, nominal charge voltage not be counted as an overcharge protection		P
	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		P
	It is recommended that the cells and cell blocks not discharged beyond the cell manufacturer's specified final voltage		P
	For batteries consisting of series-connected cells or cell blocks, cell balancing circuitry incorporated into the battery management system		P
5.6.3	Mechanical protection for cells and components of batteries		P
	Mechanical protection for cells, cell connections and control circuits within the battery provided to prevent damage as a result of intended use and reasonably foreseeable misuse		P
	The mechanical protection can be provided by the battery case or it can be provided by the end product enclosure for those batteries intended for building into an end product		P
	The battery case and compartments housing cells designed to accommodate cell dimensional tolerances during charging and discharging as recommended by the cell manufacturer		P
	For batteries intended for building into a portable end product, testing with the battery installed within the end product considered when conducting mechanical tests		N/A
5.7	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		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 $\leq 3 \Omega$ (measured according annex D) are tested according table 1		N/A
	Unless otherwise specified, tests are carried out in an ambient temperature of $20 \text{ °C} \pm 5 \text{ °C}$		P
	The safety analysis of 5.6.1 identify those components of the protection circuit that are critical for short-circuit, overcharge and over discharge protection		P
	When conducting the short-circuit test, consideration given to the simulation of any single fault condition that is likely to occur in the protecting circuit that would affect the short-circuit test		P
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 sub clauses other than those specified in 7.1.2		P
	Unless otherwise stated in this document, the charging procedure for test purposes is carried out in an ambient temperature of $20 \text{ °C} \pm 5 \text{ °C}$, using the method declared by the manufacturer		P
	Prior to charging, the battery have been discharged at $20 \text{ °C} \pm 5 \text{ °C}$ at a constant current of 0,2 It A down to a specified final voltage		P
7.1.2	Second procedure		N/A
	This charging procedure applies only to 7.3.1, 7.3.4, 7.3.5, and 7.3.9		N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	After stabilization for 1 h and 4 h, respectively, at ambient temperature of highest test temperature and lowest test temperature, as specified in Table 2, cells are charged by using the upper limit charging voltage and maximum charging current, until the charging current is reduced to 0,05 It A, using a constant voltage charging method		N/A
7.2	Intended use		P
7.2.1	Continuous charging at constant voltage (cells)		N/A
	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		N/A
	Results: No fire. No explosion. No leakage.....: (See appended table 7.2.1)		N/A
7.2.2	Case stress at high ambient temperature (battery)		P
	Oven temperature (°C).....: 70°C		—
	Results: No physical distortion of the battery case resulting in exposure of internal protective components and cells		P
7.3	Reasonably foreseeable misuse		P
7.3.1	External short-circuit (cell)		N/A
	The cells 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
	Results: No fire. No explosion.....: (See appended table 7.3.1)		N/A
7.3.2	External short-circuit (battery)		P
	The batteries were tested until one of the following occurred:		P
	- 24 hours elapsed; or		P
	- 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 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

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	Results: No fire. No explosion..... :	(See appended table 7.3.2)	P
7.3.3	Free fall		P
	Results: No fire. No explosion		P
7.3.4	Thermal abuse (cells)		N/A
	Oven temperature (°C)..... :		—
	Results: No fire. No explosion		N/A
7.3.5	Crush (cells)		N/A
	The crushing force was released upon:		N/A
	- The maximum force of 13 kN ± 0,78 kN has been applied; or		N/A
	- 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)	N/A
7.3.6	Over-charging of battery		P
	The supply voltage which is:		P
	- 1,4 times the upper limit charging voltage presented in Table A.1 (but not to exceed 6,0 V) for single cell/cell block batteries or		N/A
	- 1,2 times the upper limit charging voltage resented in Table A.1 per cell for series connected multi-cell batteries, and		P
	- Sufficient to maintain a current of 2,0 It A throughout the duration of the test or until the supply voltage is reached		P
	Test was continued until the temperature of the outer casing:		P
	- Reached steady state conditions (less than 10 °C change in 30-minute period); or		P
	- Returned to ambient		N/A
	Results: No fire. No explosion..... :	(See appended table 7.3.6)	P
7.3.7	Forced discharge (cells)		N/A
	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		N/A
	Results: No fire. No explosion..... :	(See appended table 7.3.7)	N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
7.3.8	Mechanical tests (batteries)		P
7.3.8.1	Vibration		P
	Results: No fire, no explosion, no rupture, no leakage or venting. :	(See appended table 7.3.8.1)	P
7.3.8.2	Mechanical shock		P
	Results: No leakage, no venting, no rupture, no explosion and no fire :	(See appended table 7.3.8.2)	P
7.3.9	Design evaluation – Forced internal short-circuit (cells)		N/A
	The cells complied with national requirement for :	France, Japan, Korea, Switzerland	—
	The pressing was stopped upon:		N/A
	- A voltage drop of 50 mV has been detected; or		N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached		N/A
	Results: No fire :	(See appended table 7.3.9)	N/A
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		N/A
	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		P
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product		P
	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		P
8.2	Small cell and battery safety information		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

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
	- 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		N/A
	Cells marked as specified in IEC 61960, except coin cells		N/A
	Coin cells whose external surface area is too small to accommodate the markings on the cells show the designation and polarity		N/A
	By agreement between the cell manufacturer and the battery and/or end product manufacturer, component cells used in the manufacture of a battery need not be marked		N/A
9.2	Battery marking		P
	Batteries marked as specified in IEC 61960, except for coin batteries		P
	Coin batteries whose external surface area is too small to accommodate the markings on the batteries show the designation and polarity. Batteries also marked with an appropriate caution statement		N/A
	Terminals have clear polarity marking on the external surface of the battery		P
	Batteries with keyed external connectors designed for connection to specific end products need not be marked with polarity markings if the design of the external connector prevents reverse polarity connections		P
9.3	Caution for ingestion of small cells and batteries		N/A
	Coin cells and batteries identified as small batteries according to 8.2 include a caution statement regarding the hazards of ingestion in accordance with 8.2		N/A
	When small cells and batteries are intended for direct sale in consumer-replaceable applications, caution for ingestion given on the immediate package		N/A
9.4	Other information		P
	Storage and disposal instructions		P
	Recommended charging instructions		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
10	PACKAGING AND TRANSPORT		P
	Packaging for coin cells not small enough to fit within the limits of the ingestion gauge of Figure 3		P
	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
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		N/A
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		N/A
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		N/A

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
A.4.5	Scope of the application of charging current		P
A.4.6	Consideration of discharge		P
A.4.6.1	General		P
A.4.6.2	Final discharge voltage and explanation of safety viewpoint		P
A.4.6.3	Discharge current and temperature range		P
A.4.6.4	Scope of application of the discharging current		P
A.5	Sample preparation		N/A
A.5.1	General		N/A
A.5.2	Insertion procedure for nickel particle to generate internal short		N/A
A.5.3	Disassembly of charged cell		N/A
A.5.4	Shape of nickel particle		N/A
A.5.5	Insertion of nickel particle in cylindrical cell		N/A
A.5.5.1	Insertion of nickel particle in winding core		N/A
A.5.5.2	Marking the position of the nickel particle on both ends of the winding core of the separator		N/A
A.5.6	Insertion of nickel particle in prismatic cell		N/A
A.6	Experimental procedure of the forced internal short-circuit test		N/A
A.6.1	Material and tools for preparation of nickel particle		N/A
A.6.2	Example of a nickel particle preparation procedure		N/A
A.6.3	Positioning (or placement) of a nickel particle		N/A
A.6.4	Damaged separator precaution		N/A
A.6.5	Caution for rewinding separator and electrode		N/A
A.6.6	Insulation film for preventing short-circuit		N/A
A.6.7	Caution when disassembling a cell		N/A
A.6.8	Protective equipment for safety		N/A
A.6.9	Caution in the case of fire during disassembling		N/A
A.6.10	Caution for the disassembling process and pressing the electrode core		N/A
A.6.11	Recommended specifications for the pressing device		N/A
ANNEX B	RECOMMENDATIONS TO EQUIPMENT MANUFACTURERS AND BATTERY ASSEMBLERS		P
ANNEX C	RECOMMENDATIONS TO THE END-USERS		P

IEC 62133-2			
Clause	Requirement + Test	Result - Remark	Verdict
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..... :	(See appended table D.2)	N/A
	Coin cells with an internal resistance of less than or equal to 3 Ω are subjected to the testing according to Clause 6 and Table 1		N/A
	Coin cells with an internal resistance greater than 3 Ω require no further testing		N/A
ANNEX E	PACKAGING AND TRANSPORT		P
ANNEX F	COMPONENT STANDARDS REFERENCES		N/A

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⁾
Battery pack's enclosure	INGCO TOOLS CO., LIMITED	PA6+GF30	V-0, Min. 1.5mm	IEC 62133-2	Tested with appliance
Battery pack's PCB material	KUNSHAN XUN KAI CIRCUIT BOARD CO LTD	XK-S	V-0, 130°C	IEC 62133-2 UL 796	Tested with appliance+ UL E363423
Battery cell	JIANGSU HIGHSTAR BATTERY MANUFACTURING CO., LTD	ISR18650-2000	3.7V, 2000mAh	IEC 62133-2	UL CB DK-83304-UL

Supplementary information:

¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039.

7.3.2	TABLE: External short-circuit (battery)					P
Sample no.	Ambient T (°C)	OCV before test (Vdc)	Resistance of circuit (mΩ)	Maximum case temperature rise ΔT (K)	Component single fault condition	Results
A00920218-004	22.6°C	20.80V	78	62.1	--	P
A00920218-005	22.6°C	20.78V	78	0.3	--	P
A00920218-006	22.6°C	20.75V	78	58.9	--	P
A00920218-007	22.6°C	20.76V	78	0.3	--	P
A00920218-008	23.6°C	20.74V	78	0.2	--	P

Supplementary information:

- No fire or explosion
- Others (please explain) (Nickle sheet was broken, details refer to photo documentation)

7.3.6	TABLE: Over-charging of battery				P
Constant charging current (A)			4		—
Supply voltage (Vdc)			25.2		—
Sample no.	OCV before charging (Vdc)	Total charging time (minute)	Maximum outer case temperature (°C)	Results	
A00920218-012	14.3	25	52.1	P	
A00920218-013	14.5	29	50.8	P	
A00920218-014	14.1	27	49.6	P	
A00920218-015	13.8	36	51.5	P	
A00920218-016	14.7	31	52.0	P	

Supplementary information:

- No fire or explosion
- Others (please explain)

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

7.3.8.1	TABLE: Vibration					P
Sample no.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results	
A00920218-017	20.73	20.68	377.968	377.640	P	
A00920218-018	20.87	20.81	379.490	379.183	P	
A00920218-019	20.85	20.80	378.230	377.913	P	
Supplementary information:						
<ul style="list-style-type: none"> - No fire or explosion - No rupture - No leakage - No venting - Others (please explain) No disassembly 						

7.3.8.2	TABLE: Mechanical shock					P
Sample no.	OCV before test (Vdc)	OCV after test (Vdc)	Mass before test (g)	Mass after test (g)	Results	
A00920218-020	20.88	20.85	378.997	378.917	P	
A00920218-021	20.83	20.81	378.971	378.888	P	
A00920218-022	20.87	20.84	378.122	378.058	P	
Supplementary information:						
<ul style="list-style-type: none"> - No fire or explosion - No rupture - No leakage - No venting - Others (please explain) No disassembly 						

--End of test report--