

Prüfbericht-Nr.: <i>Test report no.:</i>	CN25NLRR 001	Auftrags-Nr.: <i>Order no.:</i>	326110802	Seite 1 von 25 Page 1 of 25
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2025-05-19	
Auftraggeber: <i>Client:</i>	SUZHOU XINLVZHOU ELECTRONICS CO., LTD. SHANJI ROAD 158,XIANGCHENG DISTRICT,SUZHOU CITY,JIANGSU,CHINA.			
Prüfgegenstand: <i>Test item:</i>	Lithium Cell			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	CR2032			
Auftrags-Inhalt: <i>Order content:</i>	TÜV Rheinland Test Report			
Prüfgrundlage: <i>Test specification:</i>	IEC 60086-4:2025, EN IEC 60086-4:2025			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2025-05-23			
Prüfmuster-Nr.: <i>Test sample no.:</i>	N/A			
Prüfzeitraum: <i>Testing period:</i>	2025-05-23 to 2025-08-08			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shanghai) Co., Ltd. Kunshan Branch			
Prüflaboratorium: <i>Testing laboratory:</i>	See page 4			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: tested by:	<u>X</u>	genehmigt von: authorized by:	<u>X</u>	
Datum: <i>Date:</i>	2025-08-08	Ausstellungsdatum: <i>Issue date:</i>	2025-08-08	
Stellung / Position:	Project Engineer	Stellung / Position:	Authorizer	
Sonstiges / <i>Other:</i>	N/A			
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g.	N/A = nicht anwendbar	N/T = nicht
* Legend:	P(ass) = passed a.m. test	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
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 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.</i>				

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Test report no.:

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Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse – Bemerkungen/ Measuring results - Remarks	Ergebnis Result
1	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. <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>		
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3	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. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>		
4	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. <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>		

Test Report issued under the responsibility of:



TEST REPORT
IEC 60086-4
Primary batteries
Part 4: Safety of lithium batteries

Report Number. : CN25NLRR 001

Date of issue : See cover page

Total number of pages : See cover page

**Name of CB Testing Laboratory
preparing the Report** : See cover page

Applicant's name : See cover page

Address : See cover page

Test specification:

Standard : IEC 60086-4:2025

Test procedure : CB Scheme

Non-standard test method : N/A

TRF template used : IECEE OD-2020-F1:2024, Ed.1.7

Test Report Form No. : IEC60086_4D

Test Report Form(s) Originator.... : DEKRA Certification B.V.

Master TRF : Dated 2025-06-04

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Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.**

General disclaimer:

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

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Test item description	Lithium Cell	
Trademark(s)	N/A	
Manufacturer	Same as applicant of cover page	
Model/Type reference	CR2032	
Ratings	3.0V	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒ CB Testing Laboratory:	TÜV Rheinland (Shanghai) Co., Ltd. Kunshan Branch	
Testing location/ address	No.38, Jingfan Road, Bacheng, Kunshan, Jiangsu, China	
Tested by (name, function, signature)	See cover page	
Approved by (name, function, signature) ...:	See cover page	
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): N/A	
Summary of testing:	
Tests performed (name of test, test clause and date test performed): 6.4.1 Test A: Altitude 6.4.2 Test B: Thermal cycling 6.4.3 Test C: Vibration 6.4.4 Test D: Shock 6.5.1 Test E: External short-circuit 6.5.3 Test G: Crush 6.5.4 Test H: Forced discharge 6.5.5 Test I: Abnormal charging 6.5.6 Test J: Free fall 6.5.7 Test K: Thermal abuse 7.2 Safety precautions (Ingestion gauge)	Testing location: TÜV Rheinland (Shanghai) Co., Ltd. Kunshan Branch No.38, Jingfan Road, Bacheng, Kunshan, Jiangsu, China
Summary of compliance with National Differences N/A ☒ The product fulfils the requirements of <u>EN IEC 60086-4: 2025.</u>	
Use of uncertainty of measurement for decisions on conformity (decision rule): ☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method"). ☐ Other: ... (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)	
Information on uncertainty of measurement: The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE. IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer. Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.	

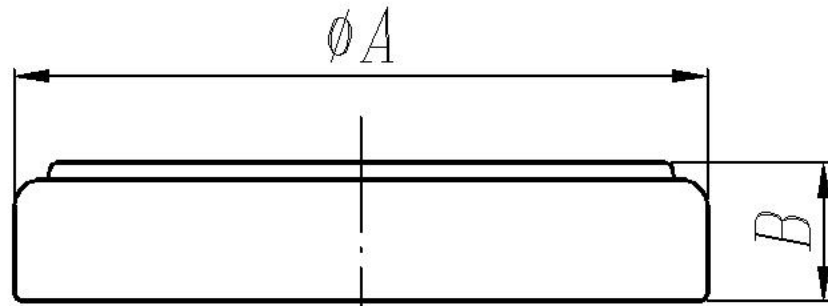
Copy of marking plate:

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



Test item particulars					
Classification of installation and use To be defined in final product					
Supply Connection DC terminal					
..... 3V					
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 See cover page					
Date (s) of performance of tests See cover page					
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. ☐ This Test Report Form contains requirements according to IEC/ISO Standard dated and includes Corrigendum dated (Note: The above text maybe removed if not applicable)					
Manufacturer's Declaration per sub-clause 4.2.5 of IEC60086-2:					
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided:				☐ Yes ☒ Not applicable	
When differences exist; they shall be identified in the General product information section.					
Name and address of factory (ies) Same as manufacturer					
General product information and other remarks:					
This product is a battery with a single primary lithium battery, without any protective circuit.					
The main features of the battery are shown as below:					
Model	Nominal capacity	Nominal voltage	Maximum discharge current	Discharge cut-off voltage	Dimensions
CR2032	210mAh	3V	5mA	2V	See Below

Construction:



A:20.0(-0.3)mm B:3.2(-0.3)mm
CR2032

Circuit diagram:

None, battery without protective circuit.

IEC 60086-4			
Clause	Requirement + Test	Result - Remark	Verdict

4	REQUIREMENTS FOR SAFETY		P
4.1	Design		P
	a) Abnormal temperature rise above the critical value is prevented		P
	b) Temperature increases in the battery is controlled		P
	c) Lithium cells and batteries are designed to relieve excessive internal pressure or to preclude a violent rupture under conditions of transport, intended use and reasonably foreseeable misuse	Venting mechanism exists.	P
	The organisational requirements described in Annex G applied in particular cases		P
4.2	Quality plan		N/A
	Manufacturer prepares and implements a quality plan defining the procedures for the inspection of materials, components, cells and batteries during the course of manufacture, to be applied to the total process of producing a specific type of battery	Not provided by manufacturer.	N/A
	Manufactures understand their process capabilities and institute the necessary process controls as they relate to product safety		N/A
5	TYPE TESTING AND SAMPLING		P
5.1	Validity of testing		P
5.2	Test samples		P
6	TESTING AND REQUIREMENTS		P
6.1	General		P
6.1.1	Test application matrix	(See table 2 in the standard)	P
	s: cell or single cell battery		P
	m: multi cell battery		N/A
6.1.3	Ambient temperature (°C)		P
6.1.4	Parameter measurement tolerances		P
6.1.5	Predischarge		P
6.1.6	Additional cells		N/A
6.2	Evaluation of test criteria		P
6.2.1	Short-circuit		P
6.2.2	Excessive temperature rise		P
6.2.3	Leakage		P
6.2.4	Venting		P
6.2.5	Fire		P
6.2.6	Rupture		P

IEC 60086-4			
Clause	Requirement + Test	Result - Remark	Verdict
6.2.7	Explosion		P
6.3	Tests and requirements – Overview		P
6.4	Tests for intended use		P
6.4.1	Test A: Altitude :	(See appended table 1)	P
6.4.2	Test B: Thermal cycling :	(See appended table 1)	P
6.4.3	Test C: Vibration :	(See appended table 1)	P
6.4.4	Test D: Shock :	(See appended table 1)	P
6.5	Tests for reasonably foreseeable misuse		P
6.5.1	General		P
	For batteries not specified in IEC 60086-2, additional requirements apply which are described in Annex G		P
6.5.2	Test E: External short-circuit :	(See appended table 1)	P
6.5.3	Test F: Impact :	(See appended table 1)	N/A
6.5.4	Test G: Crush :	(See appended table 1)	P
6.5.5	Test H: Forced discharge :	(See appended table 1)	P
6.5.6	Test I: Abnormal charging :	(See appended table 1)	P
6.5.7	Test J: Free fall :	(See appended table 1)	P
6.5.8	Test K: Thermal abuse :	(See appended table 1)	P
6.5.9	Test L: Incorrect installation :	Not CR17345 or CR15H270 battery.	N/A
6.5.10	Test M: Overdischarge :	Not CR17345 or CR15H270 battery.	N/A
6.6	Information to be given in the relevant specification		P
	a) PredischARGE current or resistive load and end-point voltage specified by the manufacturer :	15.0kΩ, 2.0V specified by client.	P
	b) Method to measure the energy of an explosion, if any :		N/A
	c) Shape: prismatic, flexible, coin or cylindrical Diameter: less than 18 mm or not less than 18 mm :	Coin battery	P
	d) Maximum continuous discharge current specified by the manufacturer for test H :		P
	e) Rated capacity specified by the manufacturer for test H..... :	210mAh	P
	f) Abnormal charging current declared by the manufacturer for test I :	2.1mA as specified by manufacturer applied.	P
	g) Nominal capacity specified by the manufacturer :	210mAh	P
	h) Normal reverse current declared by the manufacturer which applied to the battery during its operating life..... :	To be evaluated in final system	N/A

IEC 60086-4			
Clause	Requirement + Test	Result - Remark	Verdict
7	INFORMATION FOR SAFETY		P
7.1	Safety precautions during design of equipment		P
7.1.1	General		P
7.1.2	Charge protection		P
7.1.3	Parallel connection		P
7.2	Precautions during handling of batteries		P
7.3	Additional information for safety of coin cells		P
7.4	Packaging		P
7.5	Handling of battery cartons		P
7.6	Transport		N/A
7.6.1	General		N/A
7.6.2	Air transport		N/A
7.6.3	Sea transport		N/A
7.6.4	Land transport		N/A
7.7	Display and storage		N/A
7.8	Disposal		N/A
8	INSTRUCTIONS FOR USE		P
9	MARKING AND PACKAGING		P
9.1	General		P
	Batteries are marked with the following information		P
	a) designation, IEC or common	CR2032	P
	b) expiration of a recommended usage period or year and month or week of manufacture. The year and month or week of manufacture may be in code	Marked on the immediate packing instead on the battery	P
	c) polarity of the positive (+) terminal	+	P
	d) nominal voltage	3V	P
	e) name or trademark of the manufacturer or supplier	Marked on the immediate packing instead on the battery	P
	f) cautionary advice	Marked on the immediate packing instead on the battery	P
9.2	Marking of batteries too small to accommodate all markings		P
	Some batteries have a surface too small to accommodate all markings shown in 9.1. For these batteries the designation 9.1 a) and the polarity 9.1 c) are marked on the battery, while all other markings shown in 9.1 are given on the immediate packaging instead of on the battery		P
9.3	Additional requirements for swallowable coin cells and batteries		P

IEC 60086-4			
Clause	Requirement + Test	Result - Remark	Verdict
	For swallowable coin cells and batteries, that are intended for direct sale in consumer replaceable applications, caution for ingestion is also marked on the immediate packaging		P
	Swallowable coin cells and batteries that are intended for direct sale in consumer replaceable applications and have a diameter of 16 mm or more is packaged in child resistant packaging		P
9.4	Safety pictograms		N/A
ANNEX A	(INFORMATIVE) GUIDELINES FOR THE ACHIEVEMENT OF SAFETY OF LITHIUM BATTERIES		N/A
ANNEX B	(INFORMATIVE) GUIDELINES FOR DESIGNERS OF EQUIPMENT USING LITHIUM BATTERIES		N/A
ANNEX C	(INFORMATIVE) ADDITIONAL INFORMATION ON DISPLAY AND STORAGE		N/A
ANNEX D	(INFORMATIVE) SAFETY PICTOGRAMS		N/A
D.1	General		N/A
D.2	Pictograms		N/A
D.3	Instruction for use		N/A
ANNEX E	(NORMATIVE) CHILD RESISTANT PACKAGING OF COIN CELLS		N/A
E.1	General		N/A
E.2	Applicability		N/A
E.3	Packaging tests		N/A
E.3.1	General		N/A
E.3.2	Test items		N/A
E.3.3	Test procedure		N/A
E.3.4	Criteria		N/A
ANNEX F	(NORMATIVE) USE OF THE KEEP OUT OF REACH OF CHILDREN SAFETY SIGN		N/A
F.1	General		N/A
F.2	Safety sign		N/A
F.3	Marking on the packaging		N/A
	a) Refer to Table 10 for marking requirements on packaging		N/A
	b) The safety sign is on contrasting background. The background cover at least 50 % of the area of the pictogram		N/A
	c) The size of the safety sign is 6 mm in diameter or larger		N/A
	d) If the text KEEP OUT OF REACH OF CHILDREN is used, it contrasts with the background color on which it is printed		N/A

IEC 60086-4			
Clause	Requirement + Test	Result - Remark	Verdict
F.4	Marking on the cell		N/A
	a) Refer to Table 10 for marking requirements on coin cells		N/A
	b) The safety sign is applied durably and indelibly. No colour is required. Engraving, etching, embossing or stamping are acceptable		N/A
	c) The safety sign on cells has a diameter of 6 mm or larger		N/A
ANNEX G	(NORMATIVE) MEASURES AGAINST MISUSE OF BATTERIES NOT INTENDED FOR CONSUMER REPLACEMENT		N/A
G.1	Background		N/A
G.2	Additional measures for the prevention of confusion of primary batteries not intended for consumer replacement with secondary batteries		N/A
G.2.1	Identification of primary (non-rechargeable) batteries not intended for consumer replacement		N/A
	Primary batteries are considered to present a particular risk when inserted in battery chargers if they have the following properties:		N/A
	a) The battery belongs to voltage range 2 according to IEC 60086-1:2021, 4.1.7. This voltage range is characterized by a standard discharge voltage in the range from 2,72 V to 3,68 V; and		N/A
	b) The battery is not specified in IEC 60086-2 but is dimensionally interchangeable with a battery type specified in IEC 60086-2; and		N/A
	c) The battery meets one of the following conditions:		N/A
	-The battery is not intended for consumer replaceable applications; or		N/A
	-The battery does not fulfil the design requirements of 4.1 c)		N/A
G.2.2	Marking and information requirements for primary batteries not intended for consumer replacement		N/A
	Primary batteries that have been identified according to G.2.1 as presenting a particular risk are placed on the market in such a way that they cannot end up in the reach of end users.		N/A
	They are sold into applications where they can be replaced and inserted in equipment by the end user		N/A
	Where it cannot be prevented that such batteries end up in the reach of end users, the following additional measures are taken:		N/A
	a) The batteries are packed individually in an immediate packaging, e.g. in a cardboard box or in a plastic bag; and		N/A
	b) The batteries are marked visibly, legibly, and permanently according to the requirements of the local product safety legislation with an indication that they are not rechargeable and not intended for consumer replaceable applications; and		N/A

IEC 60086-4			
Clause	Requirement + Test	Result - Remark	Verdict
	c) If this marking, due to lack of space, cannot be applied on the battery itself, the marking required in list item b) is confirmed on the immediate packaging; and		N/A
	d) The indication according to list item b) is applied in connection with offers for sale in such a way that it can easily be found and read. Offers for sale on the internet is set up in such a way that the buyer, before completing the purchase, has to confirm separately that he has read and understood the indication		N/A
G.2.3	Information responsibility of manufacturers and distributors		N/A

IEC 60086-4					
Clause	Requirement + Test			Result - Remark	Verdict
TABLE 1 (clause 6.4.1 – 6.5.9)					
Tests	Cell / battery type	Discharge state	Number of test sample	Test result	Verdict
A to E	Cells or single cell batteries	Undischarged	10	NL, NV, NC, NR, NE, NF (for test A-D), NT, NR, NE, NF (for test E)	P
		Fully discharged	10	NL, NV, NC, NR, NE, NF (for test A-D), NT, NR, NE, NF (for test E)	P
	Multi-cell batteries	Undischarged	4	A:	N/A
				B:	N/A
				C:	N/A
				D:	N/A
				E:	N/A
		Fully discharged	4	A:	N/A
				B:	N/A
				C:	N/A
				D:	N/A
				E:	N/A
F	Cells or single cell batteries	Undischarged	5		N/A
		Fully discharged	5		N/A
	Multi-cell batteries	Undischarged	5 component cells		N/A
		Fully discharged	5 component cells		N/A
G	Cells or single cell batteries	Undischarged	5	NT, NE, NF	P
		Fully discharged	5	NT, NE, NF	P
	Multi-cell batteries	Undischarged	5 component cells		N/A
		Fully discharged	5 component cells		N/A
H	Cells or single cell batteries	Fully discharged	10	NE, NF	P
	Multi-cell batteries	Fully discharged	10 component cells		N/A
I	Cells or single cell batteries	Undischarged	5	NE, NF	P

IEC 60086-4					
Clause		Requirement + Test		Result - Remark	Verdict
	Multi-cell batteries	Undischarged	5		N/A
J	Cells or single cell batteries	Undischarged	5	NV, NE, NF	P
	Multi-cell batteries	Undischarged	5		N/A
K	Cells or single cell batteries	Undischarged	5	NE, NF	P
	Multi-cell batteries	Undischarged	5		N/A
L	Cells or single cell batteries	Undischarged	20		N/A
M	Cells or single cell batteries	50 % predischarged (CR-type)	10		N/A
		Fully discharged (CR-type)	10		N/A
		50 % predischarged (FR-type)	20		N/A
		Fully discharged (FR-type)	20		N/A
Supplementary information: NC: No short-circuit NE: No explosion NF: No fire NL: No leakage NR: No rupture NT: No excessive temperature rise NV: No venting					

IEC 60086-4			
Clause	Requirement + Test	Result - Remark	Verdict

6.4.1	TABLE: Test A: Altitude (Undischarged)			P
Batt. No.	Before test		After test	
	battery voltage (V)	battery weight (g)	battery voltage (V)	battery weight (g)
C1	3.355	2.827	3.353	2.827
C2	3.357	2.856	3.354	2.855
C3	3.363	2.837	3.360	2.835
C4	3.360	2.819	3.355	2.819
C5	3.362	2.824	3.361	2.824
C6	3.365	2.832	3.362	2.831
C7	3.358	2.826	3.353	2.826
C8	3.355	2.824	3.351	2.824
C9	3.360	2.819	3.357	2.819
C10	3.361	2.830	3.358	2.829
Supplementary information: - No mass loss, no leakage, no venting, no short-circuit, no rupture, no explosion and no fire.				

6.4.1	TABLE: Test A: Altitude (Fully discharged)			P
Batt. No.	Before test		After test	
	battery voltage (V)	battery weight (g)	battery voltage (V)	battery weight (g)
C11	2.878	2.831	2.882	2.831
C12	2.788	2.826	2.790	2.827
C13	2.719	2.830	2.720	2.830
C14	2.874	2.830	2.878	2.831
C15	2.725	2.827	2.726	2.827
C16	2.732	2.829	2.734	2.828
C17	2.707	2.830	2.708	2.830
C18	2.821	2.822	2.826	2.822
C19	2.731	2.834	2.734	2.833
C20	2.865	2.834	2.868	2.834
Supplementary information: - No mass loss, no leakage, no venting, no short-circuit, no rupture, no explosion and no fire.				

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Clause	Requirement + Test	Result - Remark	Verdict

6.4.2	TABLE: Test B: Thermal cycling (Undischarged)			P
Batt. No.	Before test		After test	
	battery voltage (V)	battery weight (g)	battery voltage (V)	battery weight (g)
C1	3.353	2.827	3.304	2.827
C2	3.354	2.855	3.309	2.855
C3	3.360	2.835	3.321	2.833
C4	3.355	2.819	3.309	2.819
C5	3.361	2.824	3.313	2.822
C6	3.362	2.831	3.320	2.831
C7	3.353	2.826	3.307	2.826
C8	3.351	2.824	3.306	2.823
C9	3.357	2.819	3.307	2.818
C10	3.358	2.829	3.315	2.827
Supplementary information: - No mass loss, no leakage, no venting, no short-circuit, no rupture, no explosion and no fire.				

6.4.2	TABLE: Test B: Thermal cycling (Fully discharged)			P
Batt. No.	Before test		After test	
	battery voltage (V)	battery weight (g)	battery voltage (V)	battery weight (g)
C11	2.882	2.831	2.887	2.830
C12	2.790	2.827	2.792	2.825
C13	2.720	2.830	2.723	2.829
C14	2.878	2.831	2.880	2.830
C15	2.726	2.827	2.728	2.825
C16	2.734	2.828	2.738	2.827
C17	2.708	2.830	2.711	2.829
C18	2.826	2.822	2.829	2.821
C19	2.734	2.833	2.739	2.830
C20	2.868	2.834	2.870	2.834
Supplementary information: - No mass loss, no leakage, no venting, no short-circuit, no rupture, no explosion and no fire.				

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Clause	Requirement + Test	Result - Remark	Verdict

6.4.3	TABLE: Test C: Vibration (Undischarged)			P
Batt. No.	Before test		After test	
	battery voltage (V)	battery weight (g)	battery voltage (V)	battery weight (g)
C1	3.304	2.827	3.310	2.827
C2	3.309	2.855	3.312	2.855
C3	3.321	2.833	3.323	2.833
C4	3.309	2.819	3.312	2.818
C5	3.313	2.822	3.315	2.822
C6	3.320	2.831	3.325	2.831
C7	3.307	2.826	3.310	2.826
C8	3.306	2.823	3.311	2.822
C9	3.307	2.818	3.312	2.818
C10	3.315	2.827	3.322	2.826
Supplementary information: - No mass loss, no leakage, no venting, no short-circuit, no rupture, no explosion and no fire.				

6.4.3	TABLE: Test C: Vibration (Fully discharged)			P
Batt. No.	Before test		After test	
	battery voltage (V)	battery weight (g)	battery voltage (V)	battery weight (g)
C11	2.887	2.830	2.889	2.830
C12	2.792	2.825	2.793	2.825
C13	2.723	2.829	2.727	2.829
C14	2.880	2.830	2.882	2.830
C15	2.728	2.825	2.724	2.825
C16	2.738	2.827	2.739	2.827
C17	2.711	2.829	2.712	2.829
C18	2.829	2.821	2.830	2.821
C19	2.739	2.830	2.738	2.830
C20	2.870	2.834	2.872	2.834
Supplementary information: - No mass loss, no leakage, no venting, no short-circuit, no rupture, no explosion and no fire.				

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Clause	Requirement + Test	Result - Remark	Verdict

6.4.4	TABLE: Test D: Shock (Undischarged)			P
Batt. No.	Before test		After test	
	battery voltage (V)	battery weight (g)	battery voltage (V)	battery weight (g)
C1	3.310	2.827	3.309	2.827
C2	3.312	2.855	3.310	2.855
C3	3.323	2.833	3.320	2.833
C4	3.312	2.818	3.311	2.818
C5	3.315	2.822	3.313	2.822
C6	3.325	2.831	3.322	2.831
C7	3.310	2.826	3.308	2.826
C8	3.311	2.822	3.310	2.822
C9	3.312	2.818	3.310	2.818
C10	3.322	2.826	3.321	2.827
Supplementary information: - No mass loss, no leakage, no venting, no short-circuit, no rupture, no explosion and no fire.				

6.4.4	TABLE: Test D: Shock (Fully discharged)			P
Batt. No.	Before test		After test	
	battery voltage (V)	battery weight (g)	battery voltage (V)	battery weight (g)
C11	2.889	2.830	2.884	2.830
C12	2.793	2.825	2.790	2.825
C13	2.727	2.829	2.724	2.829
C14	2.882	2.830	2.880	2.830
C15	2.724	2.825	2.722	2.825
C16	2.739	2.827	2.734	2.827
C17	2.712	2.829	2.710	2.829
C18	2.830	2.821	2.828	2.821
C19	2.738	2.830	2.734	2.830
C20	2.872	2.834	2.870	2.834
Supplementary information: - No mass loss, no leakage, no venting, no short-circuit, no rupture, no explosion and no fire.				

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Clause	Requirement + Test	Result - Remark	Verdict

6.5.1	Test E: External short-circuit (Undischarged)				P
Battery No.	Ambient, (°C)	OCV at start of test, (Vdc)	Resistance of circuit, (mΩ)	Maximum case temperature rise ΔT , (°C)	Results
C1	55.0	3.309	80	63.0	P
C2	55.0	3.310	80	62.4	P
C3	55.0	3.320	80	61.9	P
C4	55.0	3.311	80	61.7	P
C5	55.0	3.313	80	60.8	P
C6	55.0	3.322	80	61.3	P
C7	55.0	3.308	80	60.9	P
C8	55.0	3.310	80	60.2	P
C9	55.0	3.310	80	61.1	P
C10	55.0	3.321	80	62.8	P
Supplementary information: - No excessive temperature rise (>170°C), no rupture, no explosion and no fire.					

6.5.1	Test E: External short-circuit (Fully discharged)				P
Battery No.	Ambient, (°C)	OCV at start of test, (Vdc)	Resistance of circuit, (mΩ)	Maximum case temperature rise ΔT , (°C)	Results
C11	55.0	2.884	80	60.1	P
C12	55.0	2.790	80	59.4	P
C13	55.0	2.724	80	59.9	P
C14	55.0	2.880	80	58.0	P
C15	55.0	2.722	80	58.7	P
C16	55.0	2.734	80	60.3	P
C17	55.0	2.710	80	58.9	P
C18	55.0	2.828	80	60.0	P
C19	55.0	2.734	80	59.5	P
C20	55.0	2.870	80	59.7	P
Supplementary information: - No excessive temperature rise (>170°C), no rupture, no explosion and no fire.					

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Clause	Requirement + Test	Result - Remark	Verdict

6.5.3	Test G: Crush (Undischarged)			P
Battery No.	Ambient, (°C)	OCV at start of test, (Vdc)	Maximum case temperature rise ΔT , (°C)	Results
C1	20.1	3.354	25.2	P
C2	20.1	3.340	21.4	P
C3	20.1	3.361	22.0	P
C4	20.1	3.356	21.3	P
C5	20.1	3.362	22.3	P
Supplementary information: - No excessive temperature rise (>170°C), no explosion and no fire.				

6.5.3	Test G: Crush (Fully discharged)			P
Battery No.	Ambient, (°C)	OCV at start of test, (Vdc)	Maximum case temperature rise ΔT , (°C)	Results
C6	20.1	2.785	21.3	P
C7	20.1	2.768	21.2	P
C8	20.1	2.778	20.6	P
C9	20.1	2.890	21.4	P
C10	20.1	2.791	20.6	P
Supplementary information: - No excessive temperature rise (>170°C), no explosion and no fire.				

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Clause	Requirement + Test	Result - Remark	Verdict

6.5.4	TABLE: Test H: Forced discharge (Fully discharged)			P
Battery No.	Voltage before test (V)	Max. discharge current (mA)	Test duration (Min)	Results
C1	2.831	5	2520	P
C2	2.779	5	2520	P
C3	2.788	5	2520	P
C4	2.781	5	2520	P
C5	2.780	5	2520	P
C6	2.851	5	2520	P
C7	2.883	5	2520	P
C8	2.791	5	2520	P
C9	2.863	5	2520	P
C10	2.875	5	2520	P
Supplementary information: - No explosion and no fire.				

6.5.5	TABLE: Test I: Abnormal charging (Undischarged)			P
Battery No.	Voltage before test (V)	Test current (mA)	Test duration (Min)	Results
C1	3.355	63	5000	p
C2	3.362	63	5000	P
C3	3.360	63	5000	P
C4	3.360	63	5000	P
C5	3.361	63	5000	p
Supplementary information: - No explosion and no fire.				

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Clause	Requirement + Test	Result - Remark	Verdict

6.5.6	TABLE: Test J: Free fall (Undischarged)		P
Batt. No.	Before test	After test	
	battery voltage (V)	battery voltage (V)	
C1	3.358	3.358	
C2	3.360	3.360	
C3	3.357	3.357	
C4	3.362	3.362	
C5	3.358	3.358	
Supplementary information: - No venting, no explosion and no fire.			

6.5.7	TABLE: Test J: Thermal abuse (Undischarged)		P
Batt. No.	Before test	After test	
	battery voltage (V)	battery voltage (V)	
C1	3.361	3.336	
C2	3.352	3.325	
C3	3.357	3.329	
C4	3.358	3.331	
C5	3.361	3.340	
Supplementary information: - No venting, no explosion and no fire.			

TABLE: Critical components information					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
Cell	ChangZhou Anyida Power Technology Co., Ltd.	CR2032	3.0V 210mAh	--	--
-Positive electrode	ChangZhou Anyida Power Technology Co., Ltd.	CR2032	Φ16.0mm, h1.90mm	--	--
-Negative electrode	Xinghua Far- infrared Component Factory	Lithium metal	99.9% purity	--	--
-Electrolyte	ZHUHAI SMOOTHWAY ELECTRONIC MATERIALS CO., LTD.	T2017	PC+DME+DOL+	--	--
-Separator	Changzhou Jiulian Battery Material Co.Ltd	Glass fiber	0.35mm thickness	--	--
-Case	ChangZhou Anyida Power Technology Co., Ltd.	CR2032K,G	SUS430 stainless	--	--
-Gasket	ChangZhou Anyida Power Technology Co., Ltd.	CR2032	PP+Rubber		
Supplementary information:					
¹⁾ Provided evidence ensures the agreed level of compliance.					