

## SAFETY AND COMPLIANCE TESTING FOR VELEC

**Tested Sample(s)** : E-Bike  
**Brand** : Velec  
**Model** : CITI350/CITI500  
**Color** : Black  
**Size** : 700C  
**Stock / Model Number** : Not Specified  
**Country of Origin** : China  
**Age Grading** : Not Specified  
**Children's Product** : No

Prepared For:

**Velec**

754 Chemin Du Gold  
Montreal (Quebec), CA



**Issue Date: 17 October 2022**

**Final Report: 1631.07529.001.R2**

This document shall not be reproduced except in full without written approval from ACT Lab LLC.



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated April 2017.) The Joint Communiqué is available on publications and resources page of the ILAC website at <http://www.ilac.org>. Accreditation listing and certificate can be found at <http://www.iasonline.org>.

### CONCLUSION

1631.07529.001 – Velec, CITI350/CITI500 E-Bike (Black)		
Purpose of Test - Each test performed is intended to check compliance with the following:	Result	Comment
ANSI/CAN/UL/ULC 2271: 2018 Batteries for Use In Light Electric Vehicle (LEV) Applications	C	
ANSI/CAN/UL 2849: 2020 Standard for Safety Electrical Systems for e-Bikes	C	
FCC Part 15, Subpart B	NC	
ICES-003 — Information Technology Equipment	NC	
10 CFR 430.32 Energy and water conservation standards and their compliance dates.(z) Battery Chargers	C	Pass per CTI test report EED35O800593

President,

John A. Bogler

### SAMPLE IDENTIFICATION

<b>Brand:</b>	Velec	<b>Job No.:</b>	1631.07529
<b>Model:</b>	CITI350/CITI500	<b>Sample ID:</b>	1631.07529.001
<b>Manufacturer:</b>	Hifun	<b>Type:</b>	E-Bike
<b>Model No.:</b>	Not Specified	<b>Material:</b>	Not Specified
<b>Stock No.:</b>	Not Specified	<b>Size:</b>	700C
<b>UPC:</b>	Not Specified	<b>Color(s):</b>	Black
<b>Serial No.:</b>	Not Specified	<b>Weight (kg):</b>	21.96
<b>Serial No.:</b>	Not Specified	<b>Country of Origin:</b>	China



<b>Battery 1:</b>			
<b>Brand/ Type/ Manufacturer:</b>	Shanghai PYTES Energy Co., Ltd.	<b>Normal Voltage:</b>	36V
<b>Model:</b>	BTCP3610	<b>Rated Capacity:</b>	9.6Ah 345Wh

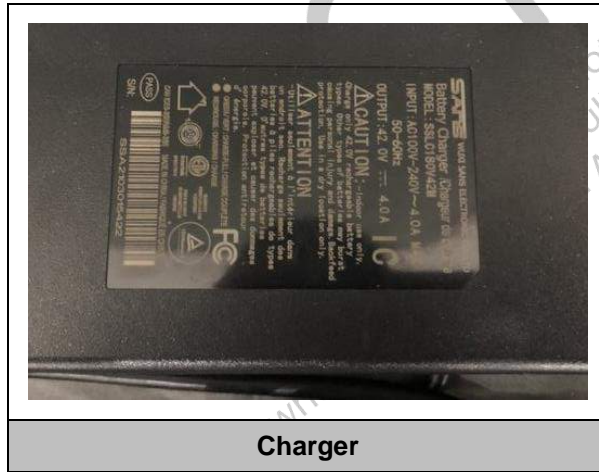


<b>Battery 2:</b>			
<b>Brand/ Type/ Manufacturer:</b>	Wanda Battery Intelligent Technology (Kunshan) Co., Ltd.	<b>Normal Voltage:</b>	36V
<b>Model:</b>	BTCP3610	<b>Rated Capacity:</b>	9.6Ah 345Wh





<b>Charger:</b>			
<b>Brand:</b>	SANS	<b>Input:</b>	100-240V
<b>Model:</b>	SSLC180V42M	<b>Output:</b>	42V/4A



**Charger**

<b>Drive Unit (Motor):</b>			
<b>Brand:</b>	Not Specified	<b>Rated Continuous Output:</b>	350W
<b>Model:</b>	100SX	<b>Rated Voltage:</b>	36V



**Drive Unit: Motor**

<b>Controller:</b>			
<b>Brand:</b>	Not Specified	<b>Serial #:</b>	Not Specified
<b>Model:</b>	YCSE074-145-36TC6	<b>Bike type:</b>	City/Trekking



**Controller**

**DATE AND PLACE OF TEST**

Sample(s) received on : 10 December 2021  
 Testing was initiated on : 25 January 2022  
 Testing was completed on : 03 March 2022  
 R1: Added Wanda battery supplier  
 R2: Changed supplier of battery 1 from DGL to Shanghai PYTES Energy Co., Ltd.  
 Changed rated capacity of battery 1 from 10Ah to 9.6Ah 345Wh  
 Testing was performed at : Taicang ACT Sporting Goods Testing Co., Ltd.  
 Taicang City, Suzhou, Jiangsu Province, China

**OUTSIDE LAB TESTING**

Testing was performed at : STQ  
 2-1-B, China-singapore science industrial zone I, 8# zhanye road, sip Suzhou, China  
 Testing was performed at : Centre Testing International (CTI) Group Co., Ltd.  
 Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China

**TEST METHODS**

Method for each test conducted is as follows:

- UL2271 testing was performed utilizing the test methods from the ANSI/CAN/UL/ULC 2271: 2018 Batteries for Use In Light Electric Vehicle (LEV) Applications.
- UL2849 testing was performed utilizing the test methods from the ANSI/CAN/UL 2849: 2020 Standard for Safety Electrical Systems for e-Bikes.

**TEST RESULTS**

<b>C:</b> Compliant; Product meets specified standard	<b>FTR:</b> Further Testing Recommended
<b>NC:</b> Non-Compliant; Product does not meet specified standard	<b>PPM:</b> Parts Per Million
<b>NA:</b> Not Applicable to this design	<b>NT:</b> Not Tested
<b>NR:</b> Not Requested by the Applicant	<b>ND:</b> None Detected
<b>NP:</b> Not Present	<b>*:</b> See Comments

## ANSI/CAN/UL/ULC 2271: 2018 Batteries for Use In Light Electric Vehicle (LEV) Applications

ANSI/CAN/UL/ULC 2271: 2018 Batteries for Use in Light Electric Vehicle (LEV) Applications			
Ref. #	Test Description	Result	Observations and Notes
CONSTRUCTION			
7	Non-Metallic Materials		
7.1	Enclosure Materials Comply with UL746C, Path III of Enclosure Requirements in Table 4.1 (or CAN/CSA-C22.2 No. 0.17)	NA	
7.2	Polymeric Materials – Minimum Flame Rating of 94V-1 (UL 94 or CAN/CSA-C22.2 No. 017)	NA	
7.3	Resistance to impact, crush resistance, abnormal operations, sever conditions, mold-stress relief distortion	NA	
7.4	Polymeric Materials – Enclosure w/ Insulation shall have Relative Thermal Index $\geq 80^{\circ}\text{C}$ (176°F) (UL 746B or CAN/CSA-C22.2 No. 017)	NA	
7.5	Enclosure Materials Exposed to Sun/Rain Meet UV Resistance and Water Exposure/Immersion Tests (UL 746C or CAN/CSA-C22.2 No. 017)	NA	
7.6	Electrical Insulation shall be resistant to deterioration	NA	
7.7	Gaskets and Seals Relied Upon for Safety Meet Environmental Requirements.	NA	
8	Metallic Pasts Resistance to Corrosion		
8.1	Metal Enclosures – Corrosion Resistant (UL 50E or CAN/CSA-C22.2 No. 94.2)	C	
8.2	Insulation of Metal Enclosures – Non-Moisture Absorbent Materials w/ Suitable Temperature Rating.	C	
8.3	Conductive parts at terminals and connections shall not be subject to corrosion due to electrochemical action.	C	
9	Enclosures		
9.1	Enclosure Strength and Rigidity	C	
9.2	Minimum Tool Requirement for Access to Enclosure (pliers, screwdriver, wrench...)	C	
9.3	Inadvertent Access to Hazardous Parts/Situations	NA	
9.4	Openings in the enclosure shall be designed to prevent ingress of water (IPX3)	C	
10	Wiring and Terminals		
10.1	Wiring shall be insulated properly		
10.2	Internal Wiring Strain Relief – no loosening of connections or damage of insulation	C	
10.3	Connections to Cell Terminals	C	
10.4	External Terminals – designed to prevent inadvertent shorting, misalignment, or disconnection when scooter is in use	C	
10.5	External Terminals for Charging – designed to prevent inadvertent shorting, misalignment, or disconnection when DUT is in use	C	
10.6	Removable Batteries/Terminals for Charging – designed to prevent inadvertent shorting, misalignment, or disconnection when DUT is in use	NA	
10.7	External Terminals/Removable Battery Packs – Endurance Test (UL 2251)	C	
10.8	Holes for Wiring – smooth surface, free of burrs, fins, sharp edges, etc..	C	
10.9	Hazardous Voltage Warning Label (ISO 7010, No. W012 – i.e. lightning bolt within triangle)	NA	
11	Fuses		
11.1	Fuses shall be acceptable for the current and voltage of the circuit they protect.	C	
11.2	Replaceable Fuses – Replacement properly/obviously marked adjacent to holder	NA	



ANSI/CAN/UL/ULC 2271: 2018 Batteries for Use in Light Electric Vehicle (LEV) Applications			
Ref. #	Test Description	Result	Observations and Notes
12	Handles	NA	
13	Electrical Spacings and Separation of Circuits		
13.1	Circuits w/ reverse polarity shall have enough spacing (or insulated properly) to prevent inadvertent shorting.	C	
13.2	Electrical Spacings – Minimum over surface and through air spacing from Table 13.1	C	
13.3	Exemptions for Minimum Insulation	NA	
13.4	Conductors of Circuits operating at different voltages shall be reliably separated (space or insulation)	C	
14	Insulation Levels and Protective Grounding		
14.1	Hazardous Voltage Circuits – Insulated from accessible conduction parts and safety extra low voltage circuits (60 Vdc or 48 Vrms)	NA	
14.4	Protective Ground System – Max Resistance of 0.1 Ω	NA	
14.5	Ground Terminal Identification	NA	
14.6	Conductor shall be properly sized – shall be green or green & yellow striped in color	NA	
15	Protective Circuits and Safety Analysis		
15.1	Protective Circuit shall maintain cells within their normal operating region for charging/discharging	C	
15.2	Analysis of potential electrical and energy hazards (FMEA)	C	
15.4	Critical Safety Circuits – provided with redundant passive protection,	NA	
15.5	Electronic and Software Protection Scheme (UL 991, UL 60730-1, IEC 61508-1)	C	
15.6	EESA Containing Hazardous Voltages – Manual Disconnect	NA	
15.7	Manual Disconnect Requirements (no auto reset, disconnects both poles, capable of full load disconnects, and no hazardous conditions upon automatic actuation)	NA	
16	Cells and Electrochemical Capacitors		
16.2	Lithium based Cells – comply w/ UL 2580 (or ULC-S2580)	C	
16.3	Nickel Based Cells – comply w/ UL 2580 (or ULC-S2580)	NA	
16.4	Sodium nickel metal chloride Based Cells – comply w/ UL 1973	NA	
16.5	Valve regulated lead acid batteries shall comply with pressure release test from UL 1989	NA	
16.6	Electrochemical capacitors shall comply with the capacitor requirements in UL 810A	NA	
17	Manufacturing and Production Line Testing		
17.1	All Batteries shall be subjected to 100% production screening to determine acceptable spacing, insulation, and grounding system production	NA	
17.2	Dielectric Withstand Test (Section 29)	NA	
17.3	Continuity Check of grounding conductors	NA	
17.4	Documented Production Process Controls	NA	
18	PERFORMANCE		
18.1	Batteries shall be fully charged. After charging and prior to testing all batteries shall rest for a maximum period 8 hours at 25±5°C (77±9°F)	C	
18.2	Use of fresh samples	C	
18.3	Ambient Room Conditions 25±5°C (77±9°F)	C	
18.4	Thermocouple requirements for measuring temperature	C	
18.5	Protective Circuits and Faults	C	

ANSI/CAN/UL/ULC 2271: 2018 Batteries for Use in Light Electric Vehicle (LEV) Applications			
Ref. #	Test Description	Result	Observations and Notes
18.6	WARNING: Risk of explosion, fire, and emission of flammable and/or toxic fumes. Take necessary precautions, use proper safety equipment/protocols, well ventilated, climate controlled area	C	
18.7	All test methods shall be followed by a minimum 1 hour observation time before next test.	C	
19	COMBUSTIBLE CONCENTRATIONS		
19.1	Cells shall not vent off gas when tested to method in 19.2	NA	
21	POST TEST CYCLE		
21.1	Operational units still functional after testing to sections 23, 24, 25, 27, 30, 31, 33, 36, 39, and 40	C	
ELECTRICAL TESTS			
23	Overcharge Test	C	
24	Short Circuit Test	C	STQ Test Report SZ2021121237
25	Over-discharge Test	C	
26	Temperature Test	C	
27	Imbalanced Charging Test	C	
28	Dielectric Voltage Withstand Test	NA	No hazardous voltage
29	Isolation Resistance Test	NA	No hazardous voltage
MECHANICAL TESTS			
30	Vibration Test	C	STQ Test Report SZ2021121237
31	Shock Test	C	STQ Test Report SZ2021121237
32	Crush Test	NA	
33	Drop Test	C	STQ Test Report SZ2021121237
34	Mold Stress Relief Test	C	STQ Test Report SZ2021121237
35	Handle Loading Test	NA	
36	Roll Over Test	C	
37	Strain Relief Test (Cord Anchorages)		
37.2	Strain Relief Pull Test	NA	
37.3	Push-Back Test	NA	
38	Immersion Test	C	STQ Test Report SZ2021121237
39	Water Exposure Test (IP Code Rating)	C	STQ Test Report SZ2021121237
40	Thermal Cycling Test	C	STQ Test Report SZ2021121237
41	Label Permanence Test	C	
MARKINGS			
42.1	Legible and Permanent Markings (adhesive-backed labels must comply w/ UL 969)	C	
42.2	Marked with Manufacturer's Name, Trade Name, Trademark, or other descriptive marking which may identify the organization responsible for the product, Part or Model	C	

ANSI/CAN/UL/ULC 2271: 2018 Batteries for Use in Light Electric Vehicle (LEV) Applications			
Ref. #	Test Description	Result	Observations and Notes
	#, Electric Ratings (Vdc and Ah or Wh), and chemistry		
42.3	External Terminal and Connections – Proper ID and Polarity Markings “positive” or “+” and “negative” or “-“	C	
42.4	Date of Manufacture or Traceable Date Code (does not repeat within 10 years)	C	
42.5	Charging Instructions (“Use Only ( ) Charger”)	C	
42.6	All external terminals and connections shall be provided with proper ID and if applicable, polarity markings.	C	
42.7	Ground Connection Markings	NA	
42.8	Warning for Hazardous Voltage Circuits	NA	
42.9	Warning about reading instruction manual.	C	
42.10	Marks for IPX3 rating not required. Scooters marked w/ higher IP ratings shall comply with those ratings.	NA	
<b>INSTRUCTIONS</b>			
43	Shall Include:		
43.1	Complete Instructions for installation and Integration of EESA in the end use vehicle to prevent movement and stress on connections and parts.	C	
	Instructions for proper use of EESA including:		
	Installation	C	
	Charing and Discharging	C	
43.2	Storage and Disposal	C	
	Temperature Limits	C	
	Charging and Discharging Limits	C	
	Instructions for replacement of user replaceable fuses.	NA	
43.3	EESA not intended for removal from vehicle and require specific charger require special marking	NA	
43.4	EESA intended for removal and charging outside of vehicle shall have safe-handling instructions for removal/insertion/storage of charged batteries.	C	
43.5	Region Specific Instructions for US and Canada	C	

## ANSI/CAN/UL/ULC 2849: 2020 Standard for Safety Electrical Systems for e-Bikes

ANSI/CAN/UL/ULC 2849: 2020 Standard for Safety Electrical Systems for e-Bikes			
Ref. #	Test Description	Result	Observations and Notes
<b>CONSTRUCTION</b>			
7	General		
7.3	For any system – bike incorporates functioning pedals. For EPAC systems – motor disengages when rider stops pedaling, when max speed is reached, or when user applies brake.	C	
7.4	The electrical systems comply with all requirements at a max altitude of 2,000 m, between ambient temperature range of 0 to 40 ° C and are subjected to Ingress Protection Test (Section 36). Equipment can be used at temperature extremes for operation and battery charging. (e.g. -10 ° C or +50 ° C).	C	
<b>POWER LEVELS EVALUATION</b>			
8.2	Dangerous Voltage and Energy		
8.3	Low Voltage Limited Energy Circuits		
8.3.1	Low voltage low energy circuits conform to limits given in <b>Table 8.1</b>	C	
8.3.2	Customer provides one of the following as their power limitation configuration:		
	A) An inherently limited transformer.	NA	
	B) A non-inherently limited transformer coupled with an overcurrent protective device in the output circuit.	C	
	C) A combination transformer and fixed impedance.	NA	
	D) An arrangement determined to be equivalent to A), B), or C)	NA	
8.3.6	Overcurrent protection devices are rated to or set to a value less than that specified in <b>Table 8.1</b> and does not have an automatic reset.	C	
8.3.7	LVLE current limitation in <b>Table 8.1</b> is not affected by a malfunction of a regulating network. The network complies with <b>Table 8.1</b> when current is measured after 5 seconds.	C	
<b>PROTECTION WHILE CHARGING</b>			
10.1	General		
10.1.1	If battery is only intended to be charged when removed from the bike, there is a mean to prevent the user from charging the battery while on the eBike.	C	
10.2	Charging Batteries On the eBike		
10.2.2	The eBike charging cables incorporate double insulation or can be considered suitable to protect user from electrical hazards when charging.	C	
10.2.5	A system of double insulation provided to protect the user shall be in accordance with the requirements in UL 2097	C*	Verified that Double insulation is present, no UL 2097 certificate"
10.2.6	The eBike has either a charger connect-interlock or some secondary means to prevent inadvertent motor activation.	C	



ANSI/CAN/UL/ULC 2849: 2020 Standard for Safety Electrical Systems for e-Bikes			
Ref. #	Test Description	Result	Observations and Notes
<b>BATTERY PACKS</b>			
11.1	Battery pack providing power to the motor is equipped with the appropriate Battery Management System (BMS) and able to withstand normal misuse. Customer provides compliance with one of the following safety standards:		
	A) UL 2580	C	
	B) UL 2271	NA	
	C) UL 62133	NA	
	D) UL 2054	NA	
11.2	Battery Management system of eBike did not provide any failures throughout Over Charging Test, Short Circuit Test, Imbalanced Charging Test, Shock Test, Vibration Test, and Thermal Cycling Test.	C	
11.3	Customer provides compliance with one of the following standards for their rechargeable batteries providing power to electrical parts, other than the motor:		
	A) UL 62133	NA	
	B) UL 2054	NA	
<b>SAFETY CIRCUITS AND SAFETY ANALYSIS</b>			
12.4	Customer provides a risk analysis assessment for potential hazards (e.g. protective circuits) addressing all hazardous events and is guided by one of the following:		
	A) IEC 60812	NA	
	B) IEC 61025	NA	
	C) SAE J1739	NA	
	D) MIL-STD-1629A	NA	
	E) Other equivalent standard	C	
12.5	Risk analysis incorporates all anticipated faults and failures that can occur.	C	
12.7	Customer provides appropriate safety criteria for the functionality and reliability of safety devices as shown below:		
	A) UL 991, UL 1998 and CSA C22.2 No. 0.8	NA	
	B) UL 60730-1 and CSA C22.2 E 60730-1	NA	
	C) IEC 61508	NA	
	D) ISO 13849-1 and ISO 13849-2	NA	
	E) Other equivalent standard	C	
<b>PRINTED WIRING BOARDS</b>			
15.1	Printed-circuit board shall comply with the requirements in UL 796 and shall have a flammability rating as indicated in Section 17.	C	
15.2	A resistor, capacitor, inductor, or other part that is mounted on a printed-circuit board to form a printed-circuit assembly shall be secured so that it does not become displaced and cause a risk of electric shock or fire by a force that is capable of being exerted on it during assembly, Intended operation, or servicing of the power supply.	C	
<b>SPACINGS AND SEPARATION OF CIRCUITS</b>			
16	Spacings and Separation of Circuits	C	

ANSI/CAN/UL/ULC 2849: 2020 Standard for Safety Electrical Systems for e-Bikes			
Ref. #	Test Description	Result	Observations and Notes
<b>FLAMMABILITY</b>			
17.2	Nonmetallic materials used for internal parts within the overall enclosure have a V-2 minimum rating.	C	
17.7	The flammability rating of the material is provided as part of the material rating or the flammability rating is determined by compliance with UL 94 and CAN/CSA C22.2 No. 0.17 provided by customer.	C	
<b>INTERNAL WIRING AND TERMINALS</b>			
18.1	Wiring insulation is acceptable for all its anticipated conditions throughout use.	C	
18.2	All internal wiring is secured properly to reduce excessive strain on wires and terminal connections, prevent loosening of terminal connections, and protect from damage to conductor insulation. All conductors are properly positioned within safety circuits so that reliance is not placed fully on the soldering alone.	C	
18.3	External terminals are designed to prevent inadvertent shorting, misalignment, and disconnection.	C	
18.4	External terminals for charging are designed to prevent inadvertent shorting, misalignment, and a reverse polarity connection when connected to charger.	C	
18.6	No sharp edges, burrs, or fins are present in any metal holes where wires pass through.	C	
18.8	All internal wiring components mounted on the eBike are sent out with the eBike to STQ outsourcing for Flexing Test	NA	
<b>OVERCURRENT PROTECTION</b>			
19.1	All power, control, and auxiliary circuits have overcurrent protection properly sized to prevent overheating of the smallest size conductor.	C	
19.2	Results received from Subcontractor's Locked Rotor Tests and Running Overload Tests do not identify any additional need for overcurrent protection devices.	C	
19.3	Technician interpretation proves overcurrent devices are located at the shortest distance possible from the power supply/battery.	C	
19.4	If overcurrent protection is needed for the LVLE circuits ( <i>determined in Section 8</i> ), customer provides this through fuses, circuit breakers, or a positive temperature coefficient device.	NA	
19.6	The fuse or circuit breaker being used is either type:		
	A. Acceptable for branch circuits	NA	
	B. A supplementary type	C	
19.7	If a positive temperature coefficient device is used, customer should provide compliance of that positive temperature coefficient device with Manufacturing Deviation and Drift; Endurance; and Requirements for Controls Using Thermistors in UL 60730-1/CSA C22.2 E60730-1.	C	
19.9	If fuses are used, customer provides their compliance with CSA C22.2 No.248.1/UL 248-1. Fuseholders being used with these fuses also comply with CSA C22.2 No. 4248.1/UL 4248-1.	C	
19.10	Replaceable fuses are marked in accordance with <i>Section 46</i> and located adjacent to each fuse or fuse holder, on the fuse holder, or in another location obvious. Replaceable fusing characteristics such as time delay or breaking capacity possess identification and information on proper fuse replacement within the eBike product instructions.	NA	

ANSI/CAN/UL/ULC 2849: 2020 Standard for Safety Electrical Systems for e-Bikes			
Ref. #	Test Description	Result	Observations and Notes
<b>MOTORS AND MOTOR CONTROLLERS</b>			
20.1	The eBike product has no hazards present when tested in Locked Rotor and Overload Conditions.	C	
20.2	The motor does not display any exceeding temperature on the insulation or windings when experiencing maximum normal anticipated loads.	C	
20.4	Sensors and motor controls performing safety functions are compliant with the requirements of the appropriate control's standard. If applicable, the eBike's startup assistance function control should need a voluntary continuous action by the user to allow startup assistance. (ex. A dead man switch)	C	
<b>GROUNDING AND BONDING</b>			
22.1	General		
22.1.2	Customer provides means of extending the ground to the eBike through a bonding conductor for both on board and off board chargers.	NA	
22.2	Bonding Connections		
22.2.1	Any dead metal parts that contain potential risk of getting energized and that are accessible to the user during operation, contain appropriate provisions to allow for the bonding of these dead metal parts to the main ground connection.	NA	
22.2.2	The bonding used meets the following criteria: <ul style="list-style-type: none"> <li>a. Constructed of a positive mean (clamps, rivets, bolt or screw connections, welding, soldering, or brazing)</li> <li>b. Made of material with a softening or melting point above 455° C (850° F)</li> <li>c. Capable of penetrating nonconductive coatings (paint or vitreous enamel)</li> <li>d. Is not dependent on the clamping action of rubber or similar material</li> </ul>	NA	
22.2.3	The equipment bonding terminal or lead-bonding point connected to frame is through a positive mean (i.e. screw or bolt connections) and not accessible from outside of the enclosure.	NA	
22.2.4	This equipment-bonding terminal is capable of penetrating nonconductive coating (paint or vitreous enamel).	NA	
22.2.5	The equipment-bonding point is located in a location that prohibits the risk of inadvertently removing the bonding during servicing.	NA	
22.2.6	The equipment-bonding lead is the same size as the grounding lead associated with the AC power source and contains a green surface insulation color.	NA	
22.2.7	If the eBike connects to a NEMA 5-20R receptacle directly, (i.e. <i>Does not connect through an off-board charger</i> ) the equipment-grounding conductor of the powersupply cord is connected to dead metal parts within the frame enclosure by a screw, stud or nut combination, or any other means that can't be removed during ordinary servicing when not involving a power supply. This grounding conductor insulation is green and can have one or more yellow stripes to identify it. No other conductor is similar in identification.	NA	
22.2.8	The equipment-grounding conductor or equipment-bonding conductor is not spliced or involves any tracing on a printed wiring board.	NA	
22.2.9	The equipment grounding or equipment bonding does not incorporate a soldering lug, a screwless push in connector, a quick connect, or any other type of friction-fit connector.	NA	



ANSI/CAN/UL/ULC 2849: 2020 Standard for Safety Electrical Systems for e-Bikes			
Ref. #	Test Description	Result	Observations and Notes
22.2.10	The equipment-grounding terminal or equipment-bonding terminal is successfully capable of securing a conductor of a size intended for its specified application.	NA	
22.2.11	The terminal used for connecting the equipment bonding conductor has one of the following identification markings: a. Being marked "G", "GR", "GND", "Ground", "Grounding", or the like; or b. The grounding symbol illustrated in <b>Figure 22.1</b> on or adjacent to the terminal or on a wiring diagram provided on the product	NA	
<b>CHARGERS</b>			
23.1	Customer provides compliance of their eBike charger with one of the following criteria:		
	A) UL 1012, and CSA C22.2 No. 107.1.	C	
	B) UL 1310 and CSA C22.2 No. 223.	NA	
	C) UL 60950-1/CSA C22.2 No. 60950-1, along with the relevant Part 2 Standard as applicable	NA	
	D) UL 62368-1/CSA C22.2 No. 62368-1.	NA	
<b>INPUT TEST</b>			
27	The current supplied to the battery from the specified external charger does not exceed more than 110 % of the max rated current for the eBike and does not exceed the rated output current for the external charger.	C	STQ Test Report SZ2021121237
<b>TEMPERATURE TEST</b>			
28	Temperatures monitored on the temperature sensitive components, enclosures, and user accessible surfaces must not exceed their specifications. During the procedure, the battery does not present any flame, molten metal, risk of fire ignition, electrical shock, or potential for injury to users.	C	
<b>INSULATION RESISTANCE TEST</b>			
29	Adequacy of Insulation Test	NA	No Hazardous voltage
<b>DIELECTRIC STRENGTH TEST</b>			
30	Dielectric Breakdown Strength Test	NA	No Hazardous voltage
<b>MOISTURE CONDITIONING</b>			
31	Humidity Conditioning	NA	No Hazardous voltage
<b>ABNORMAL OPERATION TESTS</b>			
32.2	During the overcharging procedure, the battery does not present any flame, molten metal, risk of fire ignition, electrical shock, or potential for injury to users.	C	
32.3	Component Fault Tests	C	STQ Test Report SZ2021121237
32.4	Forced Ventilation/Blocked Ventilation	NA	
32.5	Locked Rotor Motor Test	C	STQ Test Report SZ2021121237
32.6	Running Overload Test	C	STQ Test Report SZ2021121237
32.7	Short Circuit Test	C	



ANSI/CAN/UL/ULC 2849: 2020 Standard for Safety Electrical Systems for e-Bikes			
Ref. #	Test Description	Result	Observations and Notes
32.8	During the imbalanced charging procedure, the battery does not present any flame, molten metal, risk of fire ignition, electrical shock, or potential for injury to users.	C	
32.9	Shock Test	C	
32.10	Thermal Cycling	C	
<b>IMPACT RESISTANCE TO HEAT</b>			
33	Impact Test	C	STQ Test Report SZ2021121237
<b>STRESS ON CASTING</b>			
34	Mold Stress	NA	No Hazardous voltage
<b>BENDING TEST</b>			
35	Flexing Test	NA	No Hazardous voltage
<b>INFILTRATION PROTECTION TEST</b>			
36	Ingress Protection Test	C	STQ Test Report SZ2021121237
<b>DURABILITY OF MARKINGS</b>			
37	Permanence of Marking	C	
<b>VIBRATION RESISTANCE TEST</b>			
38.1	Complete Device	C	STQ Test Report SZ2021121237
38.2	Batteries / Battery Packs	C	
<b>CABLE TIE</b>			
39.2	Strain Relief – Pull Test	NA	No Hazardous voltage
39.3	Strain Relief – Push Back Test	NA	No Hazardous voltage
<b>TESTING THE STARTING ASSIST MODE</b>			
40.1	Assistant Control Activation	NA	
40.2	Test Setup for Clearance of Ground	NA	
40.3	Return State of Motor to No Load Current	NA	
40.4	Maximum Speed	NA	
40.5	Engine Observation	NA	
<b>ENGINE ASSISTANCE CONTROL</b>			
41.2	Reverse Pedaling Test	C	
41.3	Pedal Cessation Test for EPAC's	C	STQ Test Report SZ2021121237
41.4	Cutoff When Braking Test	C	
41.5	Cutoff at Maximum Speed Test	C	
<b>MARKING</b>			
42.	General		

ANSI/CAN/UL/ULC 2849: 2020 Standard for Safety Electrical Systems for e-Bikes			
Ref. #	Test Description	Result	Observations and Notes
42.1	For any etched or adhesive labels used on the product, they must be compliant with UL 969 and CSA C22.2 No. 0.15 for intended exposure conditions and compliant throughout the Permanence of Marking test.	C	
<b>NAMEPLATE AND IDENTIFICATION</b>			
43.1	The eBike product incorporates the markings listed below: a. The manufactures name b. The trade name c. Trademark or descriptive marking identifying organization responsible for product d. The part number or model number e. The electrical ratings	C	
43.3	Products with a battery pack that incorporates a battery management system residing in components or circuits outside the battery pack are marked with the charger that is specified for its use.	C	
43.4	Identification markings and polarity markings (if applicable) are present on all external terminals, including the battery terminals if pack is not keyed, and connections that are intended to be made in the field.	NA	
43.5	A factory identification code exists on the product and specifies the location where the product's systems were produced and assembled if manufacture has more than one factory location.	NA	
<b>CAUTIONARY MARKINGS</b>			
44.1	The words, "CAUTION", "WARNING", OR "DANGER" are displayed in a cautionary marking with letters no less than 3.2 mm (1/8 inch) tall. Any remaining letters in a cautionary marking are no less than 1.6 mm (1/16 inch) tall. The words, "WARNING" or "DANGER" can be used alternatively for the word, "CAUTION".	C	
44.2	Cautionary markings are located on a part that is not removable; or if removable, on a part that impairs the operation of the unit when removed. The marking is visible and legible to the operator during normal operation of the unit.	C	
<b>INSTRUCTIONS</b>			
45.1	The eBike product includes the following instructions with it: a. Legible installation instructions b. Operation instructions c. Instructions pertaining to a risk of fire, electric shock, or injury to persons associated with the use of the product d. Maintenance instructions e. Moving and storage instructions pertaining to the use of the product by the end user	NT	
45.2	Instructions are either in separate manuals or combined in one or more manuals when instructions for risk of fire, electrical shock, or injury to persons are separated in format and emphasized to distinguish themselves from the rest of the text.	NT	
45.3	Illustrations may be present to help clarify the intent of the instructions but do not replace written instructions	NT	

<b>ANSI/CAN/UL/ULC 2849: 2020 Standard for Safety Electrical Systems for e-Bikes</b>			
<b>Ref. #</b>	<b>Test Description</b>	<b>Result</b>	<b>Observations and Notes</b>
45.4	<p>The following details are displayed in all upper-case letters or emphasized to differentiate themselves from the rest of the text</p> <p>The headings for the installation, operation, user maintenance, and moving and storage instructions;</p> <p>The heading for the instructions pertaining to a risk of fire, electric shock, or injury to persons; and</p> <p>The opening and closing statements of the instructions specified in 48.3 – “IMPORTANT SAFETY INSTRUCTIONS” and “SAVE THESE INSTRUCTIONS”, or the equivalent.</p>	NT	
45.5	<p>Text of all instructions is in the words specified or words that are equivalent, clear, and understandable. Substitution of the signal word "DANGER" for "WARNING" is allowed, when the risk associated with the eBike is such that a situation exists which, if not avoided, will result in death or serious injury. For any other signal words besides the substitution of " DANGER" and "WARNING," if a specific conflict exists in the application of such wording to an eBike, modified wording is allowed.</p>	NT	
<b>INSTRUCTIONS RELATING TO THE RISK OF FIRE OR ELECTRIC SHOCK</b>			
46.1	<p>The product includes instructions relating to a risk of fire or electric shock warning the user of inherent risk. These instructions are preceded by the heading, "INSTRUCTIONS PERTAINING TO RISK OF FIRE OR ELECTRIC SHOCK" or the equivalent.</p>	NT	
46.2	<p>Numbering of the items in the list below can also include other instructions pertaining to a risk of fire, electric shock, or injury to persons that the manufacturer determines to be necessary and that do not conflict with the intent of the instructions.</p>	NT	

**ANSI/CAN/UL/ULC 2849: 2020 Standard for Safety Electrical Systems for e-Bikes**

Ref. #	Test Description	Result	Observations and Notes
46.3	<p>Instructions pertaining to risk of fire, electric shock, or injury to persons includes items listed below with the statement "IMPORTANT SAFETY INSTRUCTIONS" preceding the list and the statement "SAVE THESE INSTRUCTIONS" or the equivalent either preceding or following the list. The word "WARNING" is entirely in upper case letters, so it is distinguished from the rest of the text.</p> <p style="text-align: center;">" IMPORTANT SAFETY INSTRUCTIONS</p> <p>WARNING – When using this product, basic precautions should always be followed, including the following:</p> <ul style="list-style-type: none"> <li>a. Read all the instructions before using the product.</li> <li>b. To reduce the risk of injury, close supervision is necessary when the product is used near children.</li> <li>c. Do not put fingers or hands into the product.</li> <li>d. Do not use this product if the flexible power cord or output cable is frayed, has broken insulation, or any other signs of damage.</li> <li>e. For an off-board charger provided with a field wiring terminal or leads, the installation instructions shall state that the installation is intended to use copper wires only.</li> <li>f. For an off-board charger, when a pressure terminal connector, or the fastening hardware, are not provided on the unit as shipped. The instruction manual shall indicate which pressure terminal or component terminal assemblies are for use with the unit.</li> <li>g. With reference to (f), the terminal assembly packages, and the instruction manual shall include information identifying the wire size and the manufacturer's name, trade name, or other descriptive marking by which the organization responsible for the product is identified.</li> <li>h. When a pressure terminal connector provided on an off board charger, for a field installed conductor requires the use of other than an ordinary tool for securing the conductor, identification of the tool and any required instructions for using the tool shall be included in the installation instructions.</li> <li>i. The instruction manual for a unit where the abnormal test is terminated by operation of the intended branch circuit over current protective device, shall include the word "CAUTION" and the following or equivalent: "To reduce the risk of fire, connect only to a circuit provided with _____ amperes maximum branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA 70." The blank space is to be filled in with the applicable ampere rating of branch circuit overcurrent protection.</li> <li>j. For all equipment, the instructions shall indicate "This equipment is not intended to be used at ambient temperatures less than ____°C (____°F) or above ambient temperatures of ____°C (____°F)." The blanks are to be filled in with the manufacturer's specified ambient temperature ratings.</li> <li>k. For all equipment, the instructions shall indicate "The battery is intended to be charged when the ambient temperature is between ____°C (____°F) and ____°C (____°F). Never charge the battery when ambient temperatures are outside this range." The blanks are to be filled in with the manufacturer's specified ambient temperature range for charging.</li> </ul>	NT	



<b>ANSI/CAN/UL/ULC 2849: 2020 Standard for Safety Electrical Systems for e-Bikes</b>			
<b>Ref. #</b>	<b>Test Description</b>	<b>Result</b>	<b>Observations and Notes</b>
46.4	<p>SAVE THESE INSTRUCTIONS “ If applicable per product, the instructions described are included in the instructions pertaining to a risk of fire, electric shock, injury to persons, or installation instructions. If these instructions are included in the installation instructions than a reference to these instructions is listed throughout the list stated in Section 46.3 above. The headings and the word “WARNING” is entirely in upper case letters or emphasized to distinguish it from other text.”</p> <p style="text-align: center;">GROUNDING INSTRUCTIONS</p> <p>This product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord having an equipment grounding conductor and a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes’ ordinances.</p> <p>WARNING – Improper connection of the equipment grounding conductor is able to result in a risk of electric shock. Check with a qualified electrician if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product – if it will not fit the outlet, have a proper outlet installed by a qualified electrician. “</p>	NT	
<b>INSTALLATION INSTRUCTIONS</b>			
47.1	Installation instructions contain all the information needed to install the product for use as intended, and are preceded by the heading, “INSTALLATION INSTRUCTIONS” or the equivalent.	NT	
<b>OPERATING INSTRUCTIONS</b>			
48.1	The eBike product’s operating instructions have all the information needed to operate as anticipated and are preceded by the heading “OPERATING INSTRUCTIONS” or equivalent.	NT	
48.2	The operating instructions include a reference to the instructions pertaining to a risk of fire, electric shock, or injury to persons.	NT	
48.3	<p>The manual includes the following:</p> <ul style="list-style-type: none"> <li>a. Instructions regarding battery charging, temperature limits for equipment use and storage, battery use and storage, and the recommended temperature range for charging.</li> <li>b. A warning provided against modifying or attempting to repair the eBike system except as indicated in the instructions for use and care.</li> </ul>	NT	
48.4	An indication is placed within the operating instructions that the eBike should only be charged with the manufacturers recommended charging instructions.	NT	
<b>USER MAINTENANCE INSTRUCTIONS</b>			
49.1	The eBike’s user maintenance instructions includes explicit instructions for all cleaning and servicing that is anticipated to be done by the user and is preceded by the heading “USER MAINTENANCE INSTRUCTIONS” or equivalent.	NT	
49.2	If the eBike has replaceable fuses, the user maintenance instructions contains fuse replacement instructions that reference the correct fuse rating needed to be use.	NT	
<b>MOVING AND STORAGE INSTRUCTIONS</b>			

**ANSI/CAN/UL/ULC 2849: 2020 Standard for Safety Electrical Systems for e-Bikes**

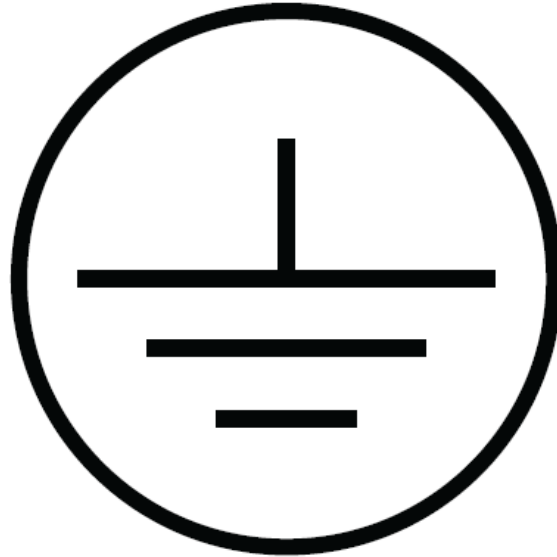
Ref. #	Test Description	Result	Observations and Notes
50.1	The eBike contains instructions describing proper moving and storage procedure with a heading preceding it stating "MOVING AND STORAGE INSTRUCTIONS" or the equivalent.	NT	

Circuit tension (volts) <sup>a</sup>	Inherently limited transformer (protection against over-intensities not required)			Transformer not inherently limited (protection against over-intensities required)			
	0 - 20 V CA or CC <sup>b</sup>	More than 20V, but no more than 30V CA or CC <sup>b</sup>	More than 30V, but no more than 60V CC <sup>b</sup>	0 - 15 V CA or CC <sup>b</sup>	More than 15V, but no more than 20V CA or CC <sup>b</sup>	More than 20V, but no more than 30V CA or CC <sup>b</sup>	More than 30V, but no more than 60V CC <sup>b</sup>
Power limitation (volts-amperes) <sup>b</sup>	-	-	-	350	250	250	250
Power limitation (amperes) <sup>d</sup>	8	8	150/V <sup>a</sup>	1000/V <sup>a</sup>	1000/V <sup>a</sup>	1000/V <sup>a</sup>	1000/V <sup>a</sup>
Maximum protection against over-intensities (amperes)	-	-	-	5	5	100/V <sup>a</sup>	100/V <sup>a</sup>

a. Maximum output voltage, regardless of the load, with rated voltage applied.  
 b. The CA waveform must be sinusoidal.  
 c. Maximum volt-ampere output, regardless of load, and protection from over-intensities (if any) bypassed.  
 d. Maximum output after 1 minute of operation under a non-capacitive load, including short circuits and with protection against over-intensities (if provided) bypassed.

**Table 8.1 – Low Energy Low Voltage Circuits**

**Figure 22.1**  
**Symbol for equipment bonding connection**



**NOTICE**

1. The report is not effective without the signature of the person(s) authorizing the report (ACT Lab's authorized signatory is John A. Bogler (President)).
2. The report is not valid if altered.
3. Claims have to be made within 15 days after receipt of this report.
4. The results of this test report relate only to the items tested.
5. The results apply to the samples as received.
6. For reports that contain results from external test service providers: Results from external test service providers are supplied by the customer and can affect validity of results.
7. Decision rule applied according to "ILAC-G8:03/2019 - Guidelines on the Reporting of Compliance with Specification".

\*\*\*\*\*

**END OF REPORT**

# UN38.3 测试报告

## UN38.3 Test Report

产品名称: 锂离子电池  
**Name of Products:** Lithium-Ion Battery

---

委托单位: 上海派智能能源有限公司  
**Applicant:** Shanghai PYTES Energy Co., Ltd

---

生产单位: 山东派智电子有限公司  
**Factory:** PYTES (SHANDONG) Electronic Co., LTD

---

检测人 Tester	唐有英	审核人 Reviewer	文韵纯	批准人 Approver	吴娟
项目工程师 / Project Engineer		项目工程师 / Project Engineer		主管工程师 / Chief Engineer	

广东联鼎检测科技有限公司  
**GUANGDONG UTL CO., LTD.**





# TEST REPORT

Report No.: PNS21105934 01001

Page 2 of 19

<b>UN38.3, Seventh Edition</b>	
<b>Recommendations on transport of dangerous goods, manual of test and criteria, Section 38.3 - Lithium metal and lithium ion Batteries</b>	
<b>Report Reference No.</b> .....	PNS21105934 01001
Date of issue .....	2022-01-17
Total number of pages .....	19 pages
<b>Testing Laboratory</b> .....	GUANGDONG UTL CO., LTD.
<b>检测单位</b>	广东联鼎检测科技有限公司
<b>Address</b> .....	Lianding Testing Building, No.18 Center Road of Yayuan Industrial Zone, Nancheng District, Dongguan, Guangdong, China.
<b>地址</b>	东莞市南城街道雅园工业区中心路18号联鼎检测大厦
<b>Applicant's name</b> .....	Shanghai PYTES Energy Co., Ltd
<b>委托单位:</b>	上海派智能源有限公司
<b>Address</b> .....	Building 9, No. 3492 Jinqian Road, Fengxian District, Shanghai, China
<b>地址:</b>	上海市奉贤区金钱公路3492号
<b>Factory's name</b> .....	PYTES (SHANDONG) Electronic Co.,LTD
<b>生产单位</b>	山东派智电子有限公司
<b>Address</b> .....	2 Building, High-tech Industrial Park , No.36 East DongfengRoad, Economic Development Zone, Weishan County, Jining City, Shandong Province, China
<b>地址</b>	山东省济宁市微山县经济开发区东风东路 36 号高新技术产业园 2 号楼
<b>Phone number/联系方式</b> .....	+86-13795499293
<b>Email/邮件地址</b> .....	wanwan_tan@dlgbattery.cn
<b>Website/网址</b> .....	N/A/不适用
<b>Test specification/测试规范</b>	
<b>Standard</b> .....	ST/SG/AC.10/11/Rev.7/Section 38.3
<b>Test procedure</b> .....	N/A
<b>Non-standard test method</b> .....	N/A
<b>Test item description/样品名称</b> .....	Lithium-Ion Battery 锂离子电池
<b>Trade Mark/商标</b> .....	N/A
<b>Model/Type reference/型号</b> .....	BTCP3610
<b>Ratings/规格</b> .....	36V, 9.6Ah, 345Wh



# TEST REPORT

Report No.: PNS21105934 01001

Page 3 of 19

## Summary of testing:

测试信息概要:

## Tests performed (name of test and test clause):

测试项目 (测试命名及条款)

Test Conclusion 测试结论	
Test(s) 测试项目	Conclusion 单项结论
T.1: Altitude simulation / 高度模拟	Pass / 通过
T.2: Thermal test / 温度试验	Pass / 通过
T.3: Vibration / 振动	Pass / 通过
T.4: Shock / 冲击	Pass / 通过
T.5: External short circuit / 外部短路	Pass / 通过
T.6: Impact / 撞击	Pass / 通过
T.7: Overcharge / 过充电	Pass / 通过
T.8: Forced discharge / 强制放电	Pass / 通过

## Sample Status:

样品状况:

Test(s) 测试项目	Sample Number 样品编号	Sample Status 样品状态
T.1~T.5	AA1 -AA4	at first cycle, in fully charged states. 第一次循环充放电周期后完全充电状态的电池。
	AA5 -AA8	after twenty-fifth cycles ending in fully charged states. 第二十五次循环充放电周期后完全充电状态的电池。
T.6	AB1 -AB5	at first cycle at 50% of the design rated capacity. 第一次循环充放电周期充电至标称容量的50%状态的电芯
	AB6 -AB10	after twenty-fifth cycles ending at 50% of the design rated capacity. 第二十五次循环充放电周期充电至标称容量的50%状态的电芯。
T.7	AA1 -AA4	at first cycle, in fully charged states. 第一次循环充放电周期后完全充电状态的电池。
	AA5 -AA8	after twenty-fifth cycles ending in fully charged states. 第二十五次循环充放电周期后完全充电状态的电池。
T.8	AB11 -AB20	at first cycle, in fully discharged states. 第一次循环充放电周期完全放电状态的电芯。
	AB21 -AB30	after twenty-fifth cycles ending in fully discharged states. 第二十五次循环充放电周期后完全放电状态的电芯。

## The test results:

测试结果:



# TEST REPORT

Report No.: PNS21105934 01001

Page 4 of 19

<b>Test item particulars</b> 样品信息	
Cell type ..... 电芯型号	INR21700M50T
Nominal Voltage of cell..... 电芯额定电压	3.69V
Rated Capacity of cell..... 电芯额定容量	4800mAh
Battery Type ..... 电池类型	lithium ion battery 锂离子电池
Appearance..... 颜色	Black 黑色
Number of cell..... 电芯数量	20pc(2P10S)
Dimension(mm) ..... 尺寸	443mm(max) × 64mm(max) × 56mm(max)
<b>Test case verdicts</b> 测试判定	
Test case does not apply to the test object ..... 判定不适用于测试对象	N/A
Test item does meet the requirement ..... 测试符合规定	P(Pass)
Test item does not meet the requirement..... 测试不符合规定	F(Fail)
<b>Testing 测试</b>	
Date of receipt of test item ..... 接样日期	2021-10-08
Date(s) of performance of test..... 测试周期	2021-10-08 to 2021-10-25
<b>General remarks 备注</b>	
<p>This report shall not be reproduced, except in full, without the written approval of the testing laboratory. 除非全部复制, 未经本实验室书面批准不得部分复制。</p> <p>The test results presented in this report relate only to the item tested. 本报告的测试结果仅对送检样品负责。</p> <p>“(see remark #)” refers to a remark appended to the report. “(见注#)”指报告的备注。</p> <p>Throughout this report a point is used as the decimal separator. 本报告中以点代替小数点。</p> <p>According to the Standard, a single-cell battery (Battery Pack) is considered a “Cell” (Battery Cell) and shall be tested according to the testing requirements for “Cell”. This testing included the samples of Battery Pack and Battery Cell as aforementioned. For testing details, please refer to Table of Test Conclusion and individual test record. 按照标准要求, 单电芯电池(电池包)被视作“电芯”(电池芯), 以“电芯”的要求进行测试, 本测试项目样品包含如前所述电池包和电池芯。有关测试详情, 请查阅测试结论表格及各单项测试记录。</p>	



# TEST REPORT

Report No.: PNS21105934 01001

Page 5 of 19

## General product information:

### 产品信息:

The main features of this model are shown as below:

产品主要信息如下:

Model 型号	Nominal capacity 额定容量	Nominal voltage 额定电压	Nominal Charge Current 额定充电 电流	Nominal Discharge Current 额定放电 电流	Maximum Charge Current 最大充电 电流	Maximum Discharge Current 最大放电 电流	Maximum Charge Voltage 最大充电 电压	Cut-off Voltage 放电截 止电压
Battery / 电池								
BTCP3610	9.6Ah	36V	3A	10A	5A	15A	42V	25V
Cell / 电芯								
INR21700 M50LT	4800mA	3.69V	1.44A	0.96A	3.36A	14.7A	4.2V	2.5V

## Test Procedure:

### 测试程序:

1. Tests T.1 to T.5 shall be conducted in sequence on the same cell or battery. Tests T.6 and T.8 shall be conducted using not otherwise tested cells. Test T.7 may be conducted using undamaged batteries previously used in Tests T.1 to T.5 for purposes of testing on cycled batteries.

测试T.1-T.5须按顺序依次在同一组电芯或电池上进行。T.6和T.8须用全新的电芯进行测试。T.7 可以用之前T.1-T.5测试中完整无损的电池进行测试。

2. In order to quantify the mass loss, the following procedure is provided:

质量损失按照如下公式计算:

$$\text{Mass loss (\%)} = \frac{(M1 - M2)}{M1} \times 100$$

Where M1 is the mass before the test and M2 is the mass after the test. When mass loss does not exceed the values in Table 38.3.1, it shall be considered as "no mass loss".

M1是测试前的重量，M2是测试后的重量。若质量损失不超过Table 38.3.1中的值即可视为“没有质量损失”。

Table 38.3.1 Mass loss limit

Mass M of cell or battery	Mass loss limit
M < 1 g	0.5%
1 g ≤ M ≤ 75 g	0.2%
M > 75 g	0.1%





# TEST REPORT

Report No.: PNS21105934 01001

Page 6 of 19

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
<b>38.3.4.1</b>	<b>Test T.1: Altitude simulation/高度模拟</b>		<b>P</b>
	Test cells and batteries shall be stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature (20±5°C)/将电芯和电池在温度为20±5°C、大气压力不大于11.6kpa的环境中贮存不少于6个小时。		P
	Cells and batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states. /电芯和电池符合要求：无漏液、无排气、无解体、无破裂以及无着火现象；电芯或电池测试后的开路电压不低于测试前开路电压的90%。此项关于电压方面的要求不适用于完全放电后的电芯和电池。	No leakage, no venting, no disassembly, no rupture and no fire. / 无漏液、无排气、无解体、无破裂以及无着火现象。  See test data for details. / 详见测试数据。	P
<b>38.3.4.2</b>	<b>Test T.2: Thermal test/温度试验</b>		<b>P</b>
	Test cells and batteries are to be stored for at least six hours at a test temperature equal to 72±2°C, followed by storage for at least six hours at a test temperature equal to - 40±2°C. The maximum time interval between test temperature extremes is 30 minutes. This procedure is to be repeated 10 times, after which all test cells and batteries are to be stored for 24 hours at ambient temperature (20 ±5°C). /首先将样品放在72±2°C的环境中放置至少6个小时，然后放在- 40±2°C的环境中放置至少6个小时。温度转换的最大间隔时间为30分钟。如此循环10次，最后将样品放在20±5°C的环境中静置24小时。		P
	For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12 hours. /对于大电芯和大电池，在高温和低温中放置的时间最少12个小时。		N/A
	Cells and batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states. /电芯和电池符合要求：无漏液、无排气、无解体、无破裂以及无着火现象；电芯或电池测试后的开路电压不低于测试前开路电压的90%。此项关于电压方面的要求不适用于完全放电后的电芯和电池。	No leakage, no venting, no disassembly, no rupture and no fire. / 无漏液、无排气、无解体、无破裂以及无着火现象。  See test data for details. / 详见测试数据。	P



# TEST REPORT

Report No.: PNS21105934 01001

Page 7 of 19

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
<b>38.3.4.3</b>	<b>Test T.3: Vibration/振动</b>		<b>P</b>
	<p>Cells and batteries are firmly secured to the platform of the vibration machine without distorting the cells in such a manner as to faithfully transmit the vibration. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting positions of the cell. One of the directions of vibration must be perpendicular to the terminal face. /样品必须牢固地安装在振动台台面上。振动以正弦波形式，以7Hz增加至200Hz，然后减少回到7Hz为一个循环，一个循环持续15分钟的对数前移传送。对样品从三个互相垂直的方向上循环12次，每个方向3个小时，共9个小时。其中一个振动方向必须是垂直样品的极性平面。</p>		P
	<p>The logarithmic frequency sweep shall differ for cells and batteries with a gross mass of not more than 12 kg (cells and small batteries), and for batteries with a gross mass of more than 12 kg (large batteries). /对于质量不大于12kg的样品(电芯和小电池)和质量超过12kg的电池(大电池)，对数扫频不同，</p>		P
	<p>For cells and small batteries: from 7 Hz a peak acceleration of 1 gn is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 8 gn occurs (approximately 50 Hz). A peak acceleration of 8 gn is then maintained until the frequency is increased to 200 Hz. /对于电芯和小电池，对数扫频为：从7Hz开始保持1gn的最大加速度直到频率为18Hz，然后将振幅保持在0.8mm (总偏移1.6mm) 并增加频率直到最大加速度达到8gn (频率约为50Hz)，将最大加速度保持在8gn直到频率增加到200Hz。</p>		P
	<p>For large batteries: from 7 Hz to a peak acceleration of 1 gn is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 2 gn occurs (approximately 25 Hz). A peak acceleration of 2 gn is then maintained until the frequency is increased to 200 Hz. /对于大电池，对数扫频为：从7Hz开始保持1gn的最大加速度直到频率为18Hz，然后将振幅保持在0.8mm (总偏移1.6mm) 并增加频率直到最大加速度达到2gn (频率约为25Hz)，将最大加速度保持在2gn直到频率增加到200Hz。</p>		N/A



# TEST REPORT

Report No.: PNS21105934 01001

Page 8 of 19

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
	Cells and batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire during the test and after the test and if the open circuit voltage of each test cell or battery directly after testing in its third perpendicular mounting position is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states. /电芯和电池符合要求：无漏液、无排气、无解体、无破裂以及无着火现象；电芯或电池测试后的开路电压不低于测试前开路电压的90%。此项关于电压方面的要求不适用于完全放电后的电芯和电池。	No leakage, no venting, no disassembly, no rupture and no fire. / 无漏液、无排气、无解体、无破裂以及无着火现象。  See test data for details. / 详见测试数据。	P
<b>38.3.4.4</b>	<b>Test T.4: Shock/冲击</b>		<b>P</b>
	Test cells and batteries shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery. /以稳固的托架固定住每个样品。		P
	Shock: a half-sine shock of peak acceleration of 150 g <sub>n</sub> (or Acceleration(g <sub>n</sub> )= $\sqrt{\frac{100850}{mass}}$ , which is smaller) and pulse duration of 6 milliseconds, large cells and large batteries shall be subjected to a half-sine or peak acceleration of 50 g <sub>n</sub> (or Acceleration(g <sub>n</sub> )= $\sqrt{\frac{30000}{mass}}$ , which is smaller) and pulse duration of 11 milliseconds/对小电芯或小电池以峰值为150 g <sub>n</sub> (或与 $\sqrt{\frac{100850}{mass}}$ 中的较小值) 的半正弦的加速度撞击，脉冲持续6毫秒，大电芯和大电池组须经受最大加速度50 g <sub>n</sub> (或与 $\sqrt{\frac{30000}{mass}}$ 中的较小值) 和脉冲持续时间11毫秒的半正弦波冲击。		P
	Each cell or battery shall be subjected to three shocks in the positive direction and to three shocks in the negative direction in each of three mutually perpendicular mounting positions of the cell or battery for a total of 18 shocks. /每个样品必须在三个互相垂直的电池安装方位的正方向经受三次冲击，接着在反方向经受三次冲击，总共经受18次冲击。		P



# TEST REPORT

Report No.: PNS21105934 01001

Page 9 of 19

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>Cells and batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.</p> <p>/ 电芯和电池符合要求：无漏液、无排气、无解体、无破裂以及无着火现象；电芯或电池测试后的开路电压不低于测试前开路电压的90%。此项关于电压方面的要求不适用于完全放电后的电芯和电池。</p>	<p>No leakage, no venting, no disassembly, no rupture and no fire. / 无漏液、无排气、无解体、无破裂以及无着火现象。</p> <p>See test data for details. / 详见测试数据。</p>	P
<b>38.3.4.5</b>	<b>Test T.5: External short circuit/外部短路</b>		<b>P</b>
	<p>The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches 57±4°C. /保持测试环境温度稳定在57±4°C，以便样品外表温度达到57±4°C。</p>		P
	<p>The cell or battery at 57 ± 4°C shall be subjected to one short circuit condition with a total external resistance of less than 0.1 ohm. This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to 57±4°C, or in the case of the large batteries, has decreased by half of the maximum temperature increase observed during the test and remains below that value. /在环境温度57±4°C的条件下，将样品正负极用小于0.1欧姆的总电阻回路进行短路，样品的外表温度恢复到57±4°C之后保持短路状态1小时以上；对于大电池，电池温度降低至最高温升值的一半时实验结束。</p>		P
	<p>Cells and batteries meet this requirement if their external temperature does not exceed 170°C and there is no disassembly, no rupture and no fire during the test and within six hours after the test. /电芯和电池符合要求：在测试过程中以及之后6个小时内，外表温度不超过170°C，并且无解体、无破裂和无着火现象发生。</p>	<p>No disassembly, no rupture and no fire. / 无解体、无破裂以及无着火现象发生。</p> <p>See test data for details. / 详见测试数据。</p>	P
<b>38.3.4.6</b>	<b>Test T.6: Impact / Crush/撞击/挤压</b>		<b>P</b>
	<p>Test procedure – Impact (applicable to cylindrical cells not less than 18.0 mm in diameter) /撞击(适合于直径大于等于18.0mm的圆柱形电芯)</p>	<p>直径大于等于18.0mm的圆柱形电芯</p>	P





# TEST REPORT

Report No.: PNS21105934 01001

Page 10 of 19

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
	The sample cell or component cell is to be placed on a flat smooth surface. A 15.8 mm±0.1mm diameter, at least 6 cm long, or the longest dimension of the cell, whichever is greater, Type 316 stainless steel bar is to be placed across the centre of the sample. A 9.1 kg±0.1 kg mass is to be dropped from a height of 61±2.5 cm at the intersection of the bar and sample in a controlled manner using a near frictionless, vertical sliding track or channel with minimal drag on the falling mass. The vertical track or channel used to guide the falling mass shall be oriented 90 degrees from the horizontal supporting surface. /将样品放在一个平坦的光滑平面上。将一直径为15.8 mm± 0.1mm, 长度不小于6cm的316不锈钢棒横过样品中部放置后, 将一质量为9.1 kg±0.1 kg的重物从61±2.5 cm的高度落向样品。		P
	The test sample is to be impacted with its longitudinal axis parallel to the flat surface and perpendicular to the longitudinal axis of the 15.8 mm±0.1mm diameter curved surface lying across the centre of the test sample. Each sample is to be subjected to only a single impact. /接受撞击的样品, 纵轴应与平坦的表面平行并与横放在样品中心的直径15.8 mm±0.1mm弯曲表面的纵轴垂直。每一个样品只接受一次撞击。		P
	Test Procedure – Crush (applicable to prismatic, pouch, coin/button cells and cylindrical cells less than 18.0 mm in diameter). /挤压 (适用于棱柱形、袋状、硬币/纽扣电芯和直径小于18.0mm的圆柱形电芯)	直径大于等于18.0mm的圆柱形电芯	N/A
	A cell or component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5 cm/s at the first point of contact. The crushing is to be continued until the first of the three options below is reached. /将样品放在两个平面之间挤压, 挤压力度逐渐加大, 在第一个接触点上的速度大约为1.5cm/s。挤压持续进行, 直到出现以下三种情况之一		N/A
	(a) The applied force reaches 13 kN±0.78 kN; /施加力达到13 kN±0.78 kN		N/A
	(b) The voltage of the cell drops by at least 100 mV; /样品的电压下降至少100mV		N/A
	(c) The cell is deformed by 50% or more of its original thickness. /电池变形达原始厚度的50%以上。		N/A



# TEST REPORT

Report No.: PNS21105934 01001

Page 11 of 19

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
	A prismatic or pouch cell shall be crushed by applying the force to the widest side. A button/coin cell shall be crushed by applying the force on its flat surfaces. For cylindrical cells, the crush force shall be applied perpendicular to the longitudinal axis. /棱柱形或袋状电芯应从最宽的一面施压。纽扣/硬币形电芯应从其平坦表面施压。圆柱形应从与纵轴垂直的方向施压。		P
	Each test cell or component cell is to be subjected to one crush only. The test sample shall be observed for a further 6 h. The test shall be conducted using test cells or component cells that have not previously been subjected to other tests. /每个样品都是全新样品，并且只经受一次施压。施压结束后样品应静置观察6小时。		P
	Cells and component cells meet this requirement if their external temperature does not exceed 170°C and there is no disassembly and no fire during the test and within six hours after this test. /电芯满足要求：在测试过程中以及之后6个小时内，外表温度不超过170°C，并且无解体和无着火现象发生。	No disassembly and no fire. / 无解体，无着火现象发生。 See test data for details. / 详见测试数据。	P
<b>38.3.4.7</b>	<b>Test T.7: Overcharge/过充电</b>		<b>P</b>
	The charge current shall be twice the manufacturer's recommended maximum continuous charge current. Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours. The minimum voltage of the test shall be as follows: /在室温下，以2倍的制造商宣称的最大持续充电电流对样品充电，测试时间为24小时。测试的最小电压如下：		P
	(a) When the manufacturer's recommended charge voltage is not more than 18V, the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the battery or 22V. /如果制造商宣称的充电电压不超过18V，本测试的最小充电电压应是制造商宣称的最大充电电压的两倍或者是22V之中的较小者。		N/A
	(b) When the manufacturer's recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage. /如果制造商宣称的充电电压超过18V，本测试的最小充电电压应该是制造商宣称的最大充电电压的1.2倍。	The voltage of the test is 50.4V, and the current is 10A. / 测试电压为50.4V，电流为10A	P
	There is no disassembly and no fire during the test and within seven days after the test. /在测试中和测试完成后7天内，样品无解体和无着火现象。	No disassembly and no fire. / 无解体，无着火现象发生 See test data for details. / 详见测试数据	P



# TEST REPORT

Report No.: PNS21105934 01001

Page 12 of 19

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
<b>38.3.4.8</b>	<b>Test T.8: Forced discharge/强制放电</b>		<b>P</b>
	<p>Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12V D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer. /在室温下，将单个电芯连接在12V的直流电源上进行强制放电，此直流电源供给每个电芯初始电流为制造商宣称的最大放电电流。</p> <p>The specified discharge current is to be obtained by connecting a resistive load of the appropriate size and rating in series with the test cell. Each cell shall be forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in ampere). /指定的放电电流通过串联在测试电芯上的合适大小和功率的负载来获得，每个电芯的强制放电时间(小时)为额定容量除以初始电流(安培)。</p>		P
	<p>There is no disassembly and no fire during the test and within seven days after the test. /在测试中和测试完成后7天内，样品无解体和无着火现象发生。</p>	<p>No disassembly and no fire. /无解体和无着火现象发生。</p> <p>See test data for details. /详见测试数据。</p>	P



# TEST REPORT

Report No.: PNS21105934 01001

Page 13 of 19

## Test Data 测试数据

### T.1 高度模拟(Altitude simulation)

Sample No. 样品编号	Before test 测试前		After test 测试后		Mass loss 质量损失(%)	Change ratio 电压比(%)	Results 试验结果
	Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
AA1	2114	41.79	2113	41.78	0.047	99.976	P
AA2	2114	41.79	2114	41.78	0.000	99.976	P
AA3	2118	41.81	2117	41.80	0.047	99.976	P
AA4	2100	41.78	2100	41.78	0.000	100.000	P
AA5	2116	41.79	2115	41.79	0.047	100.000	P
AA6	2110	41.79	2110	41.78	0.000	99.976	P
AA7	2114	41.79	2114	41.76	0.000	99.928	P
AA8	2114	41.79	2114	41.79	0.000	100.000	P

Note/注:

A. Leakage/漏液; B. Venting/排气; C. Disassembly/解体; D. Rupture/破裂; E. Fire/着火

P. No leakage, no venting, no disassembly, no rupture, no fire/无漏液, 无排气, 无解体, 无破裂, 无着火.

### T.2 温度试验(Thermal test)

Sample No. 样品编号	Before test 测试前		After test 测试后		Mass loss 质量损失(%)	Change ratio 电压比(%)	Results 试验结果
	Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
AA1	2113	41.78	2112	41.58	0.047	99.521	P
AA2	2114	41.78	2113	41.58	0.047	99.521	P
AA3	2117	41.80	2116	41.60	0.047	99.522	P
AA4	2100	41.78	2100	41.59	0.000	99.545	P
AA5	2115	41.79	2114	41.59	0.047	99.521	P
AA6	2110	41.78	2110	41.58	0.000	99.521	P
AA7	2114	41.76	2114	41.56	0.000	99.521	P
AA8	2114	41.79	2113	41.59	0.047	99.521	P

Note/注:

A. Leakage/漏液; B. Venting/排气; C. Disassembly/解体; D. Rupture/破裂; E. Fire/着火

P. No leakage, no venting, no disassembly, no rupture, no fire/无漏液, 无排气, 无解体, 无破裂, 无着火.





# TEST REPORT

Report No.: PNS21105934 01001

Page 14 of 19

## Test Data 测试数据

### T.3 振动(Vibration)

Sample No. 样品编号	Before test 测试前		After test 测试后		Mass loss 质量损失(%)	Change ratio 电压比(%)	Results 试验结果
	Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
AA1	2112	41.58	2112	41.56	0.000	99.952	P
AA2	2113	41.58	2113	41.56	0.000	99.952	P
AA3	2116	41.60	2115	41.56	0.047	99.904	P
AA4	2100	41.59	2100	41.56	0.000	99.928	P
AA5	2114	41.59	2113	41.57	0.047	99.952	P
AA6	2110	41.58	2110	41.57	0.000	99.976	P
AA7	2114	41.56	2114	41.56	0.000	100.000	P
AA8	2113	41.59	2113	41.57	0.000	99.952	P

Note/注:

A. Leakage/漏液; B. Venting/排气; C. Disassembly/解体; D. Rupture/破裂; E. Fire/着火

P. No leakage, no venting, no disassembly, no rupture, no fire/无漏液, 无排气, 无解体, 无破裂, 无着火.

### T.4 冲击(Shock)

Sample No. 样品编号	Before test 测试前		After test 测试后		Mass loss 质量损失(%)	Change ratio 电压比(%)	Results 试验结果
	Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
AA1	2112	41.56	2112	41.55	0.000	99.976	P
AA2	2113	41.56	2113	41.56	0.000	100.000	P
AA3	2115	41.56	2114	41.55	0.047	99.976	P
AA4	2100	41.56	2099	41.56	0.048	100.000	P
AA5	2113	41.57	2113	41.56	0.000	99.976	P
AA6	2110	41.57	2110	41.57	0.000	100.000	P
AA7	2114	41.56	2113	41.55	0.047	99.976	P
AA8	2113	41.57	2113	41.57	0.000	100.000	P

Note/注:

A. Leakage/漏液; B. Venting/排气; C. Disassembly/解体; D. Rupture/破裂; E. Fire/着火

P. No leakage, no venting, no disassembly, no rupture, no fire/无漏液, 无排气, 无解体, 无破裂, 无着火.



# TEST REPORT

Report No.: PNS21105934 01001

Page 15 of 19

## Test Data 测试数据

### T.5 外部短路(External short circuit)

Sample No. 样品编号	Total circuit Resistance 回路总电阻 (mΩ)	Maximum Temperature, °C 最高温度 (°C)	Results 试验结果
AA1	78.1	57.9	P
AA2	76.2	57.8	P
AA3	816	57.8	P
AA4	79.4	57.5	P
AA5	82.0	57.6	P
AA6	73.5	57.7	P
AA7	83.4	57.7	P
AA8	76.7	57.4	P

Note/注:  
A. Disassembly/解体; B. Rupture/破裂; C. Fire/着火  
P. No disassembly, no rupture, no fire within 6 hours after the test/测试后6小时内无解体, 无破裂, 无着火.

### T.6 撞击(Impact)

Sample No. 样品编号	Voltage before Test 试验前电压(V)	Maximum Temperature, °C 最高温度 (°C)	Results 试验结果
AB1	3.781	27.6	P
AB2	3.784	27.3	P
AB3	3.782	27.4	P
AB4	3.786	27.5	P
AB5	3.784	27.4	P
AB6	3.785	27.6	P
AB7	3.378	27.7	P
AB8	3.782	27.5	P
AB9	3.783	27.1	P
AB10	3.785	27.4	P

Note/注:  
A. Disassembly/解体; B. Fire/着火  
P. No disassembly, no fire within 6 hours after the test/测试后6小时内无解体, 无着火.



# TEST REPORT

Report No.: PNS21105934 01001

Page 16 of 19

## Test Data 测试数据

### T.7 过充电(Overcharge)

Sample No. 样品编号	Voltage before Test 试验前电压(V)	Results 试验结果
AA9	41.81	P
AA10	41.80	P
AA11	41.81	P
AA12	41.79	P
AA13	41.80	P
AA14	41.81	P
AA15	41.80	P
AA16	41.79	P

Note/注:  
A. Disassembly/解体; B. Fire/着火  
P. No disassembly, no fire within seven days after the test/测试后7天内无解体, 无着火.

### T.8 强制放电(Forced discharge)

Sample No. 样品编号	Voltage before Test 试验前电压(V)	Sample No. 样品编号	Voltage before Test 试验前电压(V)	Results 试验结果
AB11	3.234	AB21	3.234	P
AB12	3.247	AB22	3.241	P
AB13	3.238	AB23	3.238	P
AB14	3.245	AB24	3.241	P
AB15	3.229	AB25	3.236	P
AB16	3.234	AB26	3.240	P
AB17	3.236	AB27	3.238	P
AB18	3.234	AB28	3.236	P
AB19	3.235	AB29	3.234	P
AB20	3.237	AB30	3.236	P

Note/注:  
A. Disassembly/解体; B. Fire/着火  
P. No disassembly, no fire within seven days after the test/测试后7天内无解体, 无着火.



# TEST REPORT

Report No.: PNS21105934 01001

Page 17 of 19

Photos 照片



Figure 1 Overall view I of battery



Figure 2 Overall view II of battery





# TEST REPORT

Report No.: PNS21105934 01001

Page 18 of 19

Photos 照片



Figure 3 Overall view of cell



Figure 4 Battery Label



# TEST REPORT

Report No.: PNS21105934 01001

Page 19 of 19

## 注意事项 Important

1. 未经本试验室书面同意，不得复制或部分地复制本报告。  
Nobody is allowed to photocopy or partly photocopy this test report without written permission of UTL.
2. 本报告无批准人、审核人及检测人签名无效。  
The test report is invalid without the signatures of Approver, Reviewer and Tester.
3. 本报告涂改无效。  
The test report is invalid if altered.
4. 对检验报告若有异议，应于收到报告之日起十五天内向检验单位提出。  
Objections to the test report must be submitted to UTL within 15 days.
5. 本报告中以点号代替小数点。  
Throughout this report a point is used as the decimal separator.
6. 本报告仅对送检样品负责。  
The test report is valid for the tested samples only.
7. 本报告并未授权许可申请单位使用UTL任何UTL的名称、商标、标识等。  
The test report does not grant applicant the use of UTL name, trademark or label.
8. 任何情况下检测单位的赔偿责任都不会超过检测单位就本次检测所收取的检测费用。  
UTL's liability under no circumstance will exceed the testing fee received from applicant for test conducted hereof this testing report.
9. 检测数据和结果不具备社会证明性作用。  
The test data and results do not have social proof function.

\*\*\*\*\* 报告结束 End of Test Report \*\*\*\*\*

