NTEK 北测®

中国认可
国际互认
检测
TESTING
CNASL14149

Report No./报告编号:
P22051915501

UN38.3 Test Report

UN38.3 检测报告

000384 2022-10-12 Nothing Tech

Name of Products:	Rechargeable Li-ion Battery 831536PF4
产品名称：	可充电锂离子电池 831536PF4
Applicant:	Chongqing VDL Electronics Co., Ltd.
委托单位：	重庆市紫建电子股份有限公司
Manufacturer:	Chongqing VDL Electronics Co., Ltd.
生产厂商：	重庆市紫建电子股份有限公司
Date of issue： 签发日期：	2022-06-06

000384 2022-10-12 Nothing Tech

Shenzhen NTEK New Energy Technology Co., Ltd.

深 圳 市 北 测 新 能 源 技 术 有 限 公 司

Applicant 委托单位	Chongqing VDL Electronics Co., Ltd. 重庆市紫建电子股份有限公司
Address of Applicant 委托单位地址	Building 1-4, Puli Industrial New Area, Zhaojia Street, Kaizhou District, Chongqing, China 重庆市开州区赵家街道浦里工业新区 1-4 号楼
Manufacturer 生产厂商	Chongqing VDL Electronics Co., Ltd. 重庆市紫建电子股份有限公司
Address of manufacturer 生产厂商地址	Building 1-4, Puli Industrial New Area, Zhaojia Street, Kaizhou District, Chongqing, China 重庆市开州区赵家街道浦里工业新区 1-4 号楼
Name of Products 产品名称	Rechargeable Li-ion Battery 可充电锂离子电池
Model/Type 型号	831536PF4
Ratings 额定参数	3.85V 485mAh 1.867Wh
Date of receipt of test item 接收日期	2022-05-20
Completion Date 完成日期	2022-06-02

Tested according to 测试依据:

United Nations Manual of Tests and Criteria, PART III, section 38.3 Lithium metal and lithium ion batteries, the seventh revised edition (ST/SG/AC.10/11/Rev.7).

联合国《试验和标准手册》，第三部分，38.3 节锂金属和锂离子电池要求，第七修订版(ST/SG/AC.10/11/Rev.7)

Tests performed 测试项目:

Test T.1: Altitude simulation 试验 T.1：高度模拟
Test T.2: Thermal Test 试验 T.2：温度试验
Test T.3: Vibration 试验 T.3：振动
Test T.4: Shock 试验 T.4：冲击
Test T.5: External short circuit 试验 T.5：外部短路
Test T.6: Crush 试验 T.6：挤压
Test T.7: Overcharge 试验 T.7：过度充电
Test T.8: Forced discharge 试验 T.8：强制放电

Test Conclusion 试验结论:

The Rechargeable Li-ion Battery submitted by Chongqing VDL Electronics Co., Ltd. is tested according to the United Nations *Manual of Tests and Criteria, PART III, section 38.3 Lithium metal and lithium ion batteries, the seventh revised edition (ST/SG/AC.10/11/Rev.7).*

Test results: PASS

由重庆市紫建电子股份有限公司提交的可充电锂离子电池按照联合国《试验和标准手册》，第三部分，38.3 节锂金属和锂离子电池要求，第七修订版(ST/SG/AC.10/11/Rev.7)进行测试。

测试结果：合格

Tested by: 主检人：	Jason Yu 余克海	余克海
Reviewed by: 审核人：	Jake Chen 陈嘉南	陈嘉南
Approved by: 批准人：	Jesse Zhang 张士杰	张士杰

报告单位（盖章）
Seal of NTEK

深圳市北测新能源技术有限公司 NTEK New Energy Technology Co., Shenzhen 报告专用章 Report Seal

General product information 通用产品信息:			
Battery 电池			
Model/Type 型号	831536PF4	Rated Rating 额定值	3.85V 485mAh 1.867Wh
Standard Charging Current 标准充电电流	242.5mA	Max. Charging Current 最大充电电流	970mA
Standard Discharge Current 标准放电电流	97mA	Max. Discharge Current 最大放电电流	485mA
Limited Charging Voltage 充电限制电压	4.4V	Cut-off Voltage 放电截止电压	3.0V
Appearance 外观	Yellow, Prismatic 黄色、棱柱形	Dimension (T×W×H) 尺寸(mm)	8.4×14.8×38.0
Classification 类别	Small Lithium ion Cells 小型锂离子电芯		
Cell 电芯			
Internal Cell Model 内部电芯型号	831536PF4	Rated Rating 额定值	3.85V 485mAh 1.867Wh
Cell's Max. Discharge Current 电芯最大放电电流	485mA	Limited Charging Voltage 充电限制电压	4.4V
Cell number per battery 每个电池的组成电芯数量	1PC, 1S1P	Cut-off Voltage 放电截止电压	3.0V

Sample description 样品说明			
Type 类型	Sample No. 样品编号	Sample Sub-No. 样品子编号	State of samples 样品状态
Batteries 电池	NE220519132001-X*	001~005	Fully charged at first cycle 首次循环满电状态
		021~024	
		006~010	Fully charged after 25 cycles 25 次循环后满电状态
		025~028	
Component cells 元件电池芯		011~015	50% of the design rated capacity at first cycle 首次循环 50%电荷状态
		016~020	50% of the design rated capacity after 25 cycles 25 次循环后 50%电荷状态
		029~038	Fully discharged at first cycle 首次循环完全放电状态
		039~048	Fully discharged after 25 cycles 25 次循环后完全放电状态
* "X" contained in Sample No. represents Sample Sub-No., it consists of three digit. 包含在样品编号中的"X"表示样品子编号，由 3 位数字组成。			

Test environment condition: Room temperature: 15°C-25°C; Room humidity: 40-70%
试验环境条件：环境温度：15°C-25°C；环境湿度：40-70%
Remark备注：None无

Summaries of testing 测试摘要:

All rechargeable battery types, including those composed of previously tested cells, shall be subjected to tests T.1 to T.5 and T.7. In addition, rechargeable single cell batteries with overcharge protection shall be subjected to test T.7.

所有可充电的电池组类型，包括由已经通过试验的电芯组成的电池，均须做 T.1 至 T.5 和 T.7 的试验。此外，带有防止过充电保护装置的可充电的单电芯电池也必须承受 T.7 的试验。

Tests T.1 to T.5 are conducted in sequence on the same battery. Tests 6 and 8 are conducted using not otherwise tested batteries. 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.

电池必须按顺序在相同的一组电池上进行T.1至T.5的试验。T.6和T.8的试验应使用另外未试验过的电池。T.7的试验可以使用先前在T.1至T.5的试验中使用过的未损坏电池进行，以便测试进行在循环过的电池上。

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

$$\text{Mass loss}(\%)=(M_1-M_2)/M_1\times 100$$

为了量化质量损失，使用以下公式计算：

$$\text{质量损失}(\%)=(M_1-M_2)/M_1\times 100$$

Where M_1 is the mass before the test and M_2 is the mass after the test. When mass loss does not exceed the values in Table below, it is considered as "no mass loss".

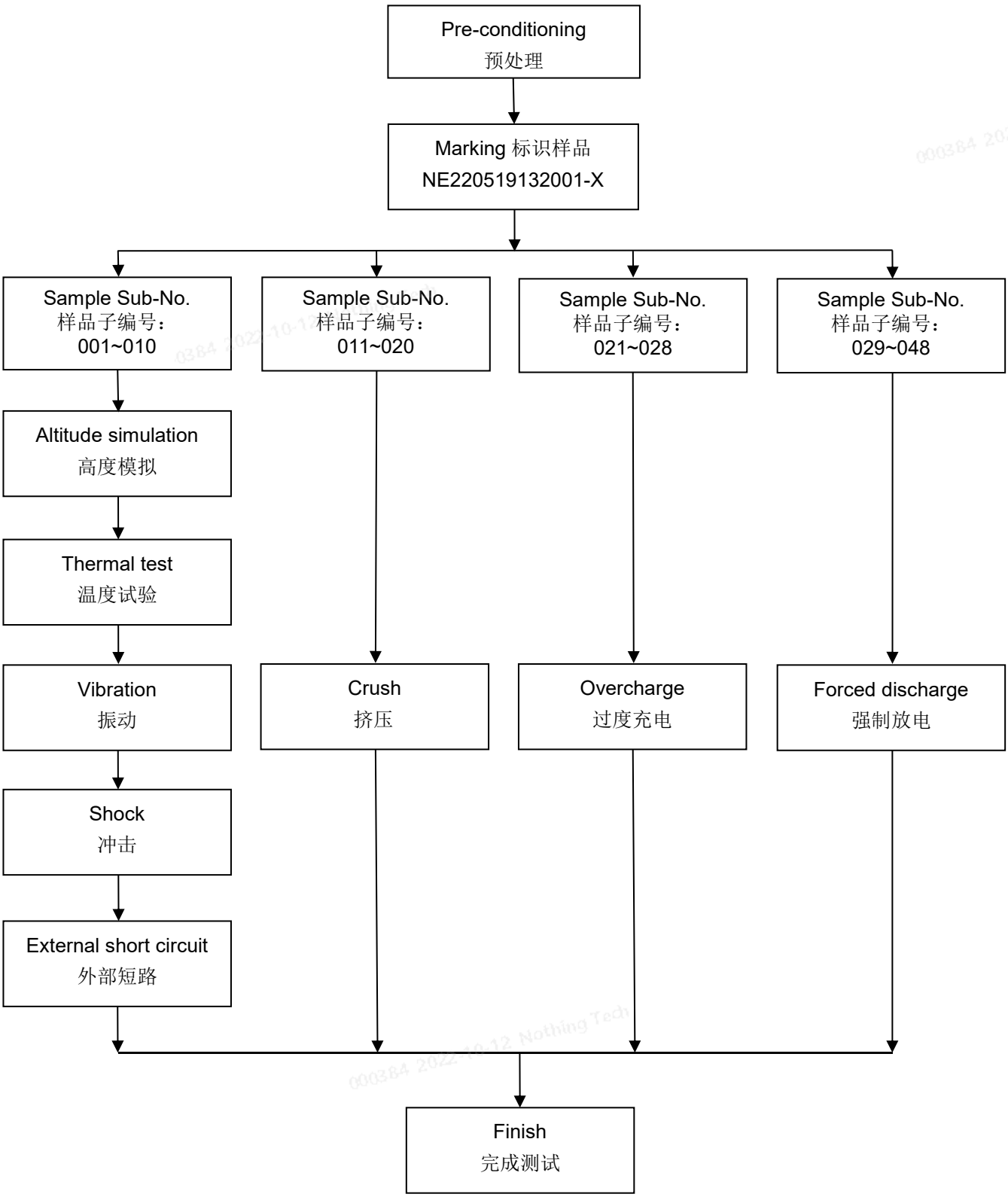
式中：M_1是试验前的质量，M_2是试验后的质量。如果质量损失不超过下表所列的数值，应视为“无质量损失”。

Mass M of cell or battery 电芯或电池的质量	Mass loss limit 质量损失限值
M＜1g	0.5%
1g≤M≤75g	0.2%
M＞75g	0.1%

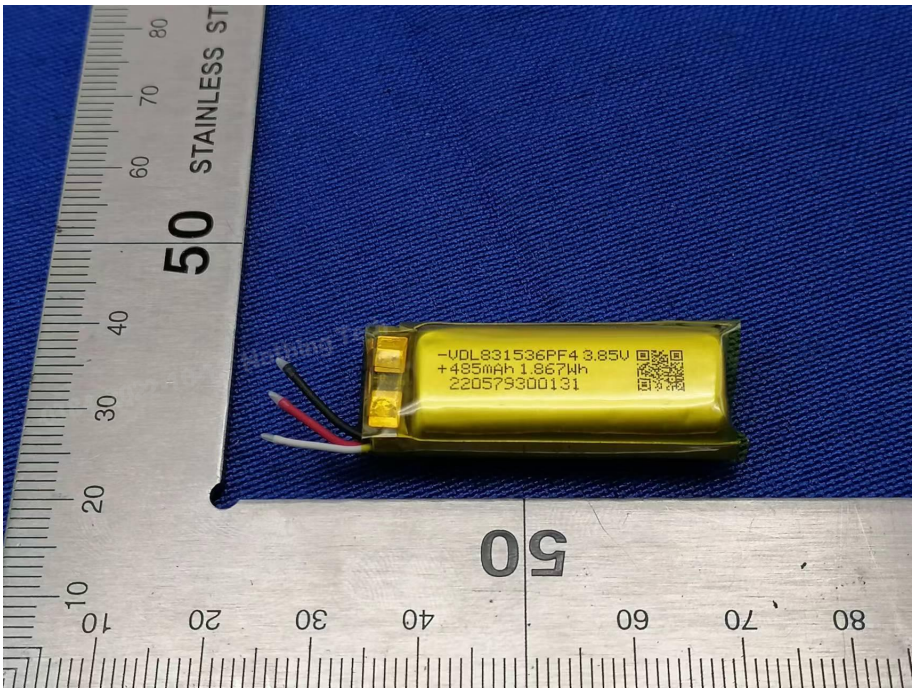
In tests T.1 to T.4, batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test battery after testing is not less than 90% of its voltage immediately prior to this procedure.

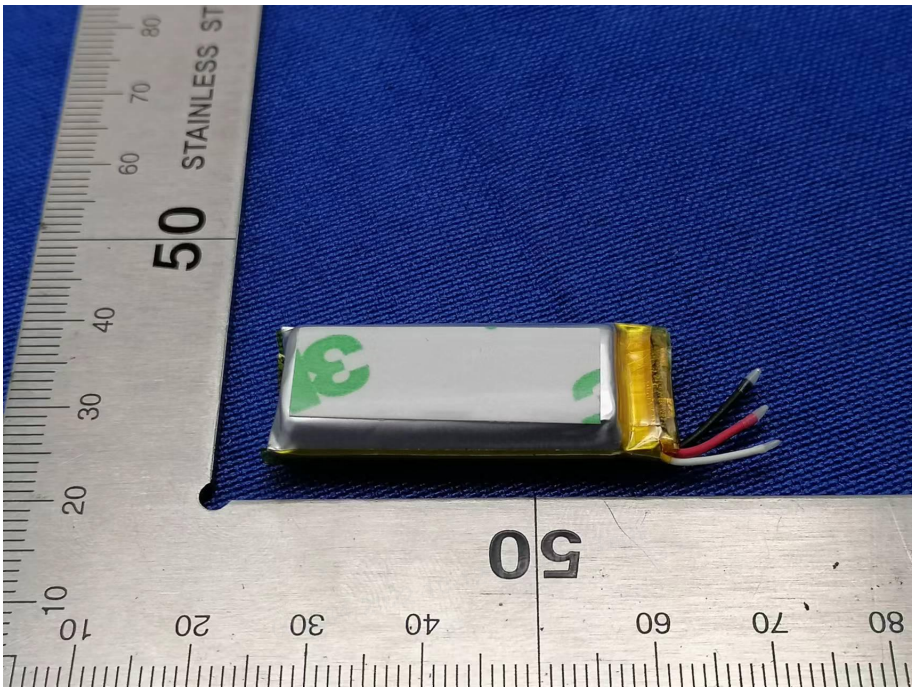
在T.1至T.4的试验中，电池须满足无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电池在试验后的开路电压不小于其在进行这一试验前电压的90%。

Test Procedure 测试程序

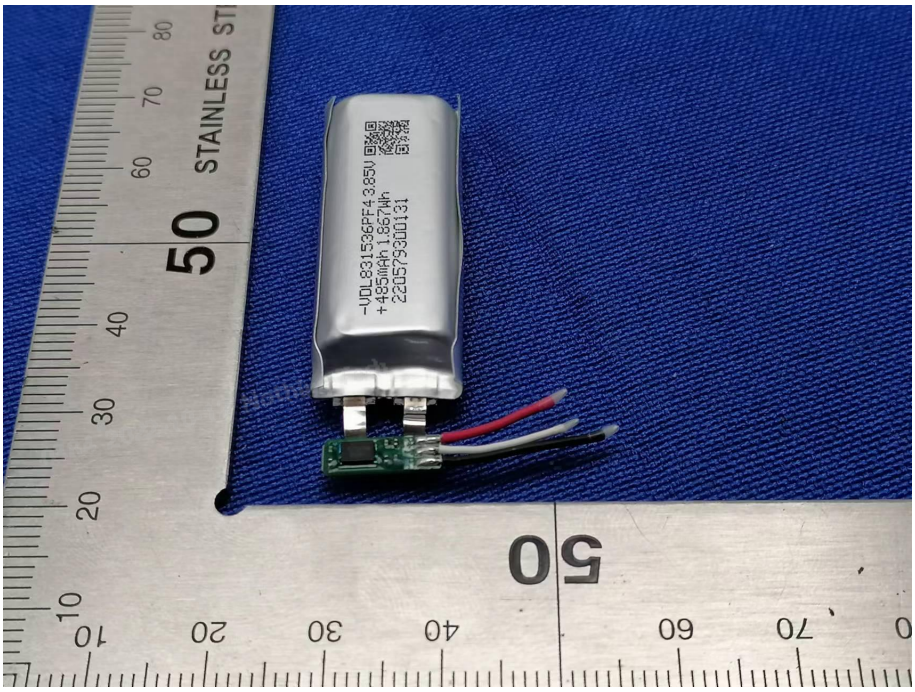


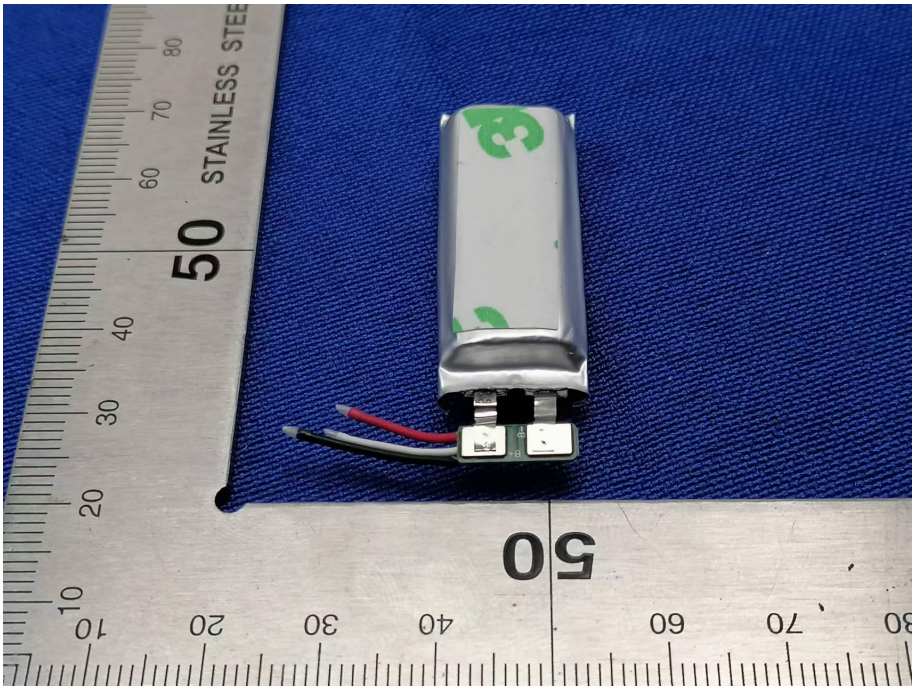
Photos of sample 样品照片



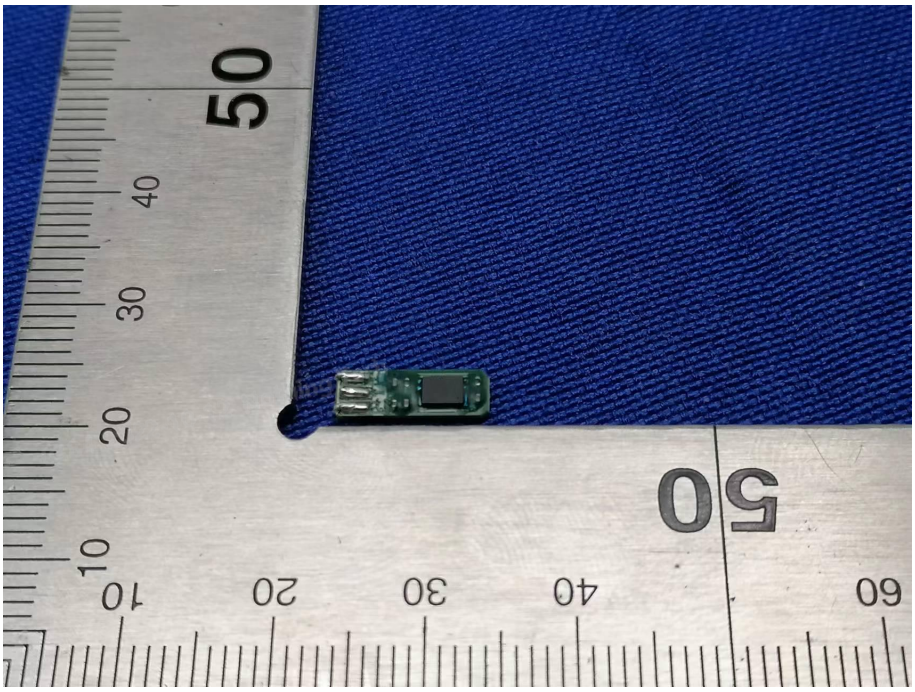


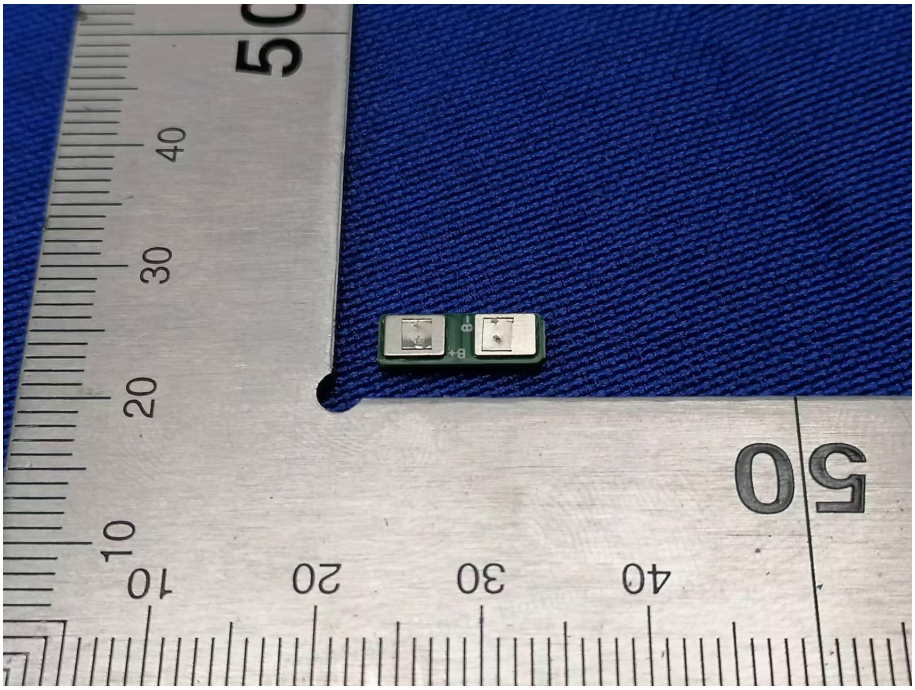
Photos of sample 样品照片





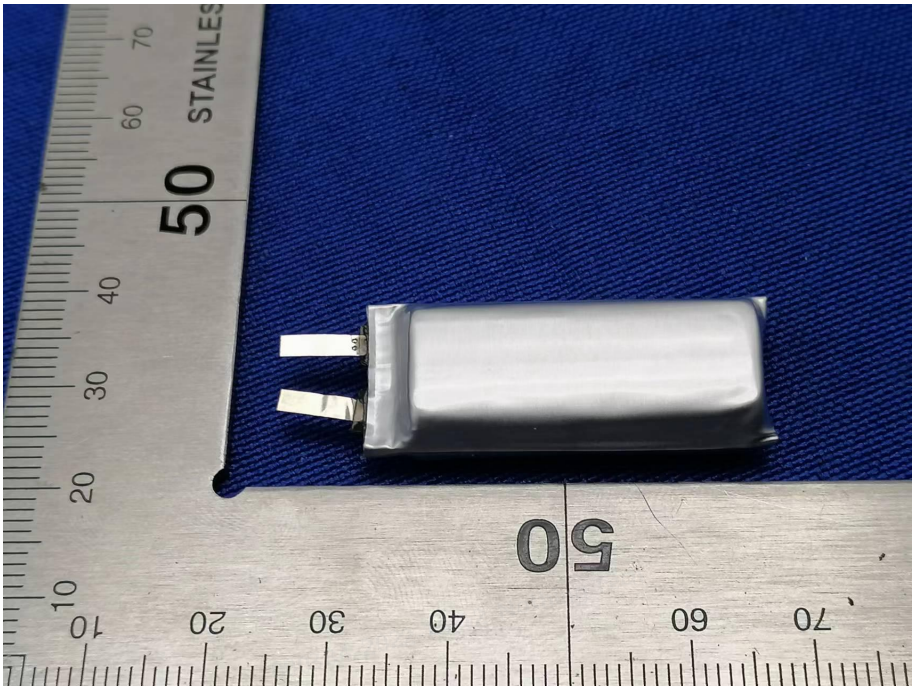
Photos of sample 样品照片





Photos of sample 样品照片





Test results 测试结果:

Test T.1: Altitude simulation 试验T.1：高度模拟

Test method 测试方法

Batteries are stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature (20 ± 5°C).
试验电池被放置在压力等于或低于11.6 kPa和环境温度(20±5°C)下存放至少6小时。

Requirement 要求

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 battery after testing is not less than 90% of its voltage immediately prior to this procedure.
电池须无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电池在试验后的开路电压不小于其在进行这一试验前电压的90%。

Test Data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Prior to test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage prior to test 试验后电压/试验前电压(%)	Results 结果
	Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
001	7.8518	4.369	7.8518	4.357	0.000	99.73	PASS 合格
002	7.8463	4.367	7.8463	4.351	0.000	99.63	PASS 合格
003	7.8467	4.365	7.8467	4.360	0.000	99.89	PASS 合格
004	7.8017	4.365	7.8017	4.358	0.000	99.84	PASS 合格
005	7.8963	4.374	7.8963	4.356	0.000	99.59	PASS 合格
006	7.8429	4.369	7.8429	4.357	0.000	99.73	PASS 合格
007	7.8208	4.365	7.8208	4.356	0.000	99.79	PASS 合格
008	7.8588	4.369	7.8588	4.352	0.000	99.61	PASS 合格
009	7.8462	4.367	7.8462	4.350	0.000	99.61	PASS 合格
010	7.8439	4.369	7.8439	4.354	0.000	99.66	PASS 合格

Notes 注释:

After the test, there is no leakage, no venting, no disassembly, no rupture and no fire.
测试后，电池未渗漏、未泄气、未解体、未破裂和未起火。

Room temperature 环境温度: 21.0°C

Test T.2: Thermal test 试验T.2：温度试验

Test method 测试方法

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 batteries are to be stored for 24 hours at ambient temperature (20 ± 5°C).

电池放置在试验温度等于72±2°C的条件下存放至少6小时，接着再在试验温度等于-40±2°C的条件下存放至少6小时。两个极端试验温度之间的最大时间间隔为30分钟。此程序重复进行，共完成10次，接着将所有试验电池在环境温度(20±5°C)下存放24小时。

Requirement 要求

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 battery after testing is not less than 90% of its voltage immediately prior to this procedure.

电池须无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电池在试验后的开路电压不小于其在进行这一试验前电压的90%。

Test Data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Prior to test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage prior to test 试验后电压/试验前电压(%)	Results 结果
	Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
001	7.8518	4.357	7.8501	4.263	0.022	97.84	PASS 合格
002	7.8463	4.351	7.8448	4.260	0.019	97.91	PASS 合格
003	7.8467	4.360	7.8442	4.263	0.032	97.78	PASS 合格
004	7.8017	4.358	7.7998	4.261	0.024	97.77	PASS 合格
005	7.8963	4.356	7.8939	4.263	0.030	97.87	PASS 合格
006	7.8429	4.357	7.8419	4.261	0.013	97.80	PASS 合格
007	7.8208	4.356	7.8190	4.268	0.023	97.98	PASS 合格
008	7.8588	4.352	7.8574	4.263	0.018	97.95	PASS 合格
009	7.8462	4.350	7.8446	4.261	0.020	97.95	PASS 合格
010	7.8439	4.354	7.8421	4.262	0.023	97.89	PASS 合格

Notes 注释:

After the test, there is no leakage, no venting, no disassembly, no rupture and no fire.

测试后，电池未渗漏、未泄气、未解体、未破裂和未起火。

Room temperature 环境温度: 21.4°C

Test T.3: Vibration 试验T.3：振动

Test method 测试方法

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.

The logarithmic frequency sweep is as follows: from 7 Hz a peak acceleration of 1 g_n 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 g_n occurs (approximately 50 Hz). A peak acceleration of 8 g_n is then maintained until the frequency is increased to 200 Hz.

电池紧固于振动台台面，但不得造成电芯变形，并能准确可靠地传播振动。振动应是正弦波形，对数扫描频率在7 Hz和200 Hz之间，再回到7 Hz，1次循环时间为15分钟。这一振动过程须对三个互相垂直的电芯安装方位的每一方向重复进行12次，总共为时3小时。其中一个振动方向必须与端面垂直。

对数扫频方式：从7 Hz开始，保持1 g_n的最大加速度，直到频率达到18 Hz。然后将振幅保持在0.8mm（总位移1.6mm），并增加频率直到峰值加速度达到8 g_n（频率约为50 Hz）。将峰值加速度保持在8 g_n直到频率增加到200 Hz。

Requirement 要求

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 battery directly after testing in its third perpendicular mounting position is not less than 90% of its voltage immediately prior to this procedure.

测试中和测试后电池须无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电池在第三个垂直安装方位上的试验后立即测得的开路电压不小于在进行这一试验前电压的90%。

Test Data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Prior to test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage prior to test 试验后电压/试验前电压(%)	Results 结果
	Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
001	7.8501	4.263	7.8501	4.245	0.000	99.58	PASS 合格
002	7.8448	4.260	7.8448	4.241	0.000	99.55	PASS 合格
003	7.8442	4.263	7.8442	4.247	0.000	99.62	PASS 合格
004	7.7998	4.261	7.7998	4.248	0.000	99.69	PASS 合格
005	7.8939	4.263	7.8939	4.242	0.000	99.51	PASS 合格
006	7.8419	4.261	7.8419	4.243	0.000	99.58	PASS 合格
007	7.8190	4.268	7.8190	4.249	0.000	99.55	PASS 合格
008	7.8574	4.263	7.8574	4.239	0.000	99.44	PASS 合格
009	7.8446	4.261	7.8446	4.239	0.000	99.48	PASS 合格
010	7.8421	4.262	7.8421	4.241	0.000	99.51	PASS 合格

Notes 注释:

During and after the test, there is no leakage, no venting, no disassembly, no rupture and no fire.

测试中和测试后，电池未渗漏、未泄气、未解体、未破裂和未起火。

Room temperature 环境温度: 21.3°C

Test T.4: Shock 试验 T.4：冲击

Test method 测试方法

Batteries are secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery. Each battery is subjected to a half-sine shock of peak acceleration of 150 g_n and pulse duration of 6 milliseconds. Each battery is subjected to three shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicular mounting positions of the battery for a total of 18 shocks.

试验电池用刚性支架紧固在试验装置上，支架支撑着每个试验电池的所有安装面。每个电池须经受峰值加速度150 gn和脉冲持续时间6 ms的半正弦波冲击。每个电池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。

Requirement 要求

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 battery after testing is not less than 90% of its voltage immediately prior to this procedure.

电池须无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电池在试验后的开路电压不小于其在进行这一试验前电压的90%。

Test Data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Prior to test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage prior to test 试验后电压/试验前电压(%)	Results 结果
	Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
001	7.8501	4.245	7.8501	4.245	0.000	100.0	PASS 合格
002	7.8448	4.241	7.8448	4.241	0.000	100.0	PASS 合格
003	7.8442	4.247	7.8442	4.247	0.000	100.0	PASS 合格
004	7.7998	4.248	7.7998	4.248	0.000	100.0	PASS 合格
005	7.8939	4.242	7.8939	4.242	0.000	100.0	PASS 合格
006	7.8419	4.243	7.8419	4.243	0.000	100.0	PASS 合格
007	7.8190	4.249	7.8190	4.249	0.000	100.0	PASS 合格
008	7.8574	4.239	7.8574	4.239	0.000	100.0	PASS 合格
009	7.8446	4.239	7.8446	4.239	0.000	100.0	PASS 合格
010	7.8421	4.241	7.8421	4.241	0.000	100.0	PASS 合格

Notes 注释:

After the test, there is no leakage, no venting, no disassembly, no rupture and no fire.

测试后，电池未渗漏、未泄气、未解体、未破裂和未起火。

Room temperature 环境温度: 22.3°C

Test T.5: External short circuit 试验T.5：外部短路

Test method 测试方法

Batteries to be tested are heated for a period of time necessary to reach a homogeneous stabilized temperature of 57 ± 4 °C, measured on the external case. This period of time depends on the size and design of the battery and is assessed and documented. Then the battery at 57 ± 4 °C is 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 battery external case temperature has returned to 57 ± 4 °C.

The short circuit and cooling down phases are conducted at least at ambient temperature.

试验电池首先被加热或恒定一段时间，使其达到57 ± 4 °C并使其外表面温度均匀恒定在57 ± 4 °C。该加热时间或热恒定时间的长短取决于该电池的尺寸和设计，并同时加以评估及提供文件证明。然后该电池在57 ± 4 °C的条件下承受一个外部总阻抗小于0.1Ω的短路条件。

该短路测试持续到电池外表面温度返回至57 ± 4 °C后再保持至少1小时。

该短路和冷却阶段均被执行在57 ± 4 °C的环境温度下。

Requirement 要求

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 test.

电池外壳温度不超过170°C，并且在试验过程中及试验后6小时内无解体、无破裂，无起火。

Test data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Maximum outer casing temperature 电池表面最高温度 (°C)	Results 结果
001	57.9	PASS 合格
002	58.1	PASS 合格
003	58.3	PASS 合格
004	58.1	PASS 合格
005	57.9	PASS 合格
006	58.0	PASS 合格
007	57.9	PASS 合格
008	57.9	PASS 合格
009	58.2	PASS 合格
010	58.1	PASS 合格

Notes 注释:

There is no disassembly, no rupture and no fire during the test and within six hours after test.

电池在测试中和测试后 6 小时内未解体、未破裂，未起火。

Room temperature 环境温度: 22.1°C

Test T.6: Crush 试验T.6：挤压

Test method 测试方法

A 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.

(a) The applied force reaches 13 kN ± 0.78 kN; (b) The voltage of the cell drops by at least 100 mV; or

(c) The cell is deformed by 50% or more of its original thickness.

Once the maximum pressure has been obtained, the voltage drops by 100 mV or more, or the cell is deformed by at least 50% of its original thickness, the pressure is released.

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.

Each component cell is to be subjected to one crush only. The test sample is observed for a further 6 h. The test is conducted using component cells that have not previously been subjected to other tests.

将元件电池芯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 1.5 cm/s。挤压持续进行，直到出现以下三种情况之一：

a)施加的力量达到 13 kN ± 0.78 kN；b)电芯的电压下降至少 100mV；或

c)电芯形变达原始厚度的 50%或更多。

一旦达到最大压力、电压下降 100mV 或更多，或电芯形变至少达原厚度的 50%，即可解除压力。

棱柱形或袋装电芯须从最宽的面施压。扣式或币式电芯，须施加挤压力在它的扁平面之间。圆柱形电芯，挤压力须施加于垂直于电芯纵轴的方向上。

每个试样元件电池芯只做一次挤压试验。试样须继续观察 6 小时。试验须使用之前未做过其他试验的元件电池芯进行。

Requirement 要求

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 the test.

元件电池芯外壳温度不超过170°C，并且在试验过程中及试验后6小时内无解体，无起火。

Test data showed in table below 测试数据见下表

Sample Sub-No. 样品子编号	Maximum outer casing temperature 电池芯表面最高温度 (°C)	Results 结果
011	22.5	PASS 合格
012	22.5	PASS 合格
013	22.6	PASS 合格
014	22.4	PASS 合格
015	22.7	PASS 合格
016	22.6	PASS 合格
017	22.3	PASS 合格
018	22.7	PASS 合格
019	22.5	PASS 合格
020	22.4	PASS 合格

Notes 注释:

There is no disassembly, no rupture and no fire during the test and within six hours after test.

元件电池芯在测试中和测试后 6 小时内未解体、未起火。

Room temperature 环境温度: 21.4°C

Test T.7: Overcharge 试验 T.7：过度充电

Test method 测试方法

The charge current is twice the manufacturer's recommended maximum continuous charge current. The minimum voltage of the test is as follows:

☒ When the manufacturer's recommended charge voltage is not more than 18V, the minimum voltage of the test is the lesser of two times the maximum charge voltage of the battery or 22V.

☐ 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.

Tests are to be conducted at ambient temperature. The duration of the test is 24 hours.

充电电流为制造商建议的最大持续充电电流的两倍。试验的最小电压如下：

☒ 制造商建议的充电电压不大于18V时，试验的最小电压应是电池最大充电电压的两倍或22伏两者中的较小者。

☐ 制造商建议的充电电压大于18V时，试验的最小电压应是电池组最大充电电压的1.2倍。

试验在环境温度下进行。试验时间为24小时。

Requirement 要求

Batteries meet this requirement if there is no disassembly and no fire during the test and within seven days after the test.

电池在试验过程中和试验后7天内无解体，无起火。

Test data showed in table below 测试数据见下表

Overcharge current 过充电电流(mA)..... :	2×970=2400mA
Overcharge voltage 过充电电压(Vdc)..... :	2×4.4=8.8V
Duration of the test 过充试验时间(hours)..... :	24 hours
Sample Sub-No.样品子编号	Results 结果
021	PASS 合格
022	PASS 合格
023	PASS 合格
024	PASS 合格
025	PASS 合格
026	PASS 合格
027	PASS 合格
028	PASS 合格

Notes 注释:

There is no disassembly and no fire during the test and within seven days after the test.

电池在测试中和测试后 7 天内未解体，未着火。

Room temperature 环境温度: 23.1°C

Test T.8: Forced discharge 试验 T.8：强制放电

Test method 测试方法

Each component cell is 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. 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 is forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in ampere).

每个元件电池芯在环境温度下与 12V 直流电电源串联在起始电流等于制造商给定的最大放电电流的条件下强制放电。

电芯与一个适当大小的电阻负载串联以调节到规定大小的放电电流。每块电芯的放电时间（单位为 h）等于电芯的额定容量除以试验初始放电电流（单位 A）。

Requirement 要求

Component cells meet this requirement if there is no disassembly and no fire during the test and within seven days after the test.

元件电池芯在试验过程中和试验后 7 天内无解体，无起火。

Test data showed in table below 测试数据见下表

Initial current 初始电流(mA)..... :		485mA	
Supply voltage 试验电压(Vdc)..... :		12Vdc	
Time interval 试验时间(Minutes)..... :		60 Minutes	
Sample Sub-No. 样品子编号	Results 结果	Sample Sub-No. 样品子编号	Results 结果
029	PASS 合格	039	PASS 合格
030	PASS 合格	040	PASS 合格
031	PASS 合格	041	PASS 合格
032	PASS 合格	042	PASS 合格
033	PASS 合格	043	PASS 合格
034	PASS 合格	044	PASS 合格
035	PASS 合格	045	PASS 合格
036	PASS 合格	046	PASS 合格
037	PASS 合格	047	PASS 合格
038	PASS 合格	048	PASS 合格

Notes 注释:

There is no disassembly and no fire during the test and within seven days after the test.

元件电池芯在测试中和测试后 7 天内未解体，未着火。

Room temperature 环境温度: 22.2°C

*********End of Test Report 检测报告结束*********

Important Notice
注意事项

1. The test report is invalid without the Report Seal of NTEK and Paging seal of NTEK.
   本报告书无本公司报告专用章、骑缝章无效.
2. Nobody is allowed to photocopy or partly photocopy this test report without written permission of NTEK.
   未经本公司书面同意，不得部分地复制本报告书。
3. The test report is invalid without the signatures of Approver, Reviewer and Testing engineer.
   本报告书无批准人、审核人、及主检人签名无效。
4. The report is invalid when anything of following happens – illegal transfer, reproduce, embezzlement, imposture, modification or tampering in any media form.
   私自转让、复制、盗用、冒用、涂改、或以任何媒体形式篡改的报告书无效。
5. Objections to the test report must be submitted to NTEK within 15 days.
   对报告书若有异议，应于收到报告之日起15天内向本公司提出。
6. The test report is valid for the tested samples only.
   本报告仅对测试样品有效。
7. The Chinese contents in this report are only for reference.
   本报告中的中文内容仅供参考。

Shenzhen NTEK New Energy Technology Co., Ltd.
深圳市北测新能源技术有限公司
Address: Room 101, Building C, Fenda Hi-Tech Park, Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen, Guangdong, China.
地址：深圳市宝安区航城街道三围社区奋达高新科技园 C 栋 101
Tel 电话：+86(0)-755-3699 5529　　E-mail 邮箱：Quality@ntekbat.org.cn
Website 网址：http://www.ntekbat.org.cn