Report Reference No./报告编号:
SNB180824006001B

UN38.3 Test Report
UN38.3 检测报告

Name of Products:	Rechargeable Lithium Iron Phosphate Battery Pack 14500-1S1P
产品名称：	可充式磷酸铁锂电池组 14500-1S1P
Client:	SHENZHEN BAK ENERGY CO., LTD
委托单位：	深圳比克能源有限公司
Manufacturer:	SHENZHEN BAK ENERGY CO., LTD
制造商：	深圳比克能源有限公司
Date of issue：	2018-10-08
签发日期：	

Shenzhen NTEK Testing Technology Co., Ltd.

深 圳 市 北 测 检 测 技 术 有 限 公 司

Manufacturer 制造商	SHENZHEN BAK ENERGY CO., LTD 深圳比克能源有限公司
Address of manufacturer 制造商地址	26/F, BAK Tech Bldg, 9th Keyan Rd, Hi-tech Park, Nanshan Dist, Shenzhen City, China 广东省深圳市南山区科研路 9 号比克科技大厦 26 楼
Factory 工厂	SHENZHEN BAK ENERGY CO., LTD 深圳比克能源有限公司
Address of factory 工厂地址	26/F, BAK Tech Bldg, 9th Keyan Rd, Hi-tech Park, Nanshan Dist, Shenzhen City, China 广东省深圳市南山区科研路 9 号比克科技大厦 26 楼
Name of Products 产品名称	Rechargeable Lithium Iron Phosphate Battery Pack 可充式磷酸铁锂电池组
Model/type reference 型号	14500-1S1P
Trade Mark 商标	-

Tested according to 测试依据:

Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Test and Criteria, PART III, section 38.3 Lithium metal and lithium ion batteries, the sixth revised edition (ST/SG/AC.10/11/Rev.6).

联合国《关于危险货物运输的建议书，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，第六修订版 (ST/SG/AC.10/11/Rev.6)

Tests performed 测试项目:

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

Test Conclusion 试验结论:

The Rechargeable Lithium Iron Phosphate Battery Pack submitted by SHENZHEN BAK ENERGY CO., LTD is tested according to the *Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Test and Criteria, PART III, section 38.3 Lithium metal and lithium ion batteries, the sixth revised edition (ST/SG/AC.10/11/Rev.6)*.

Test results: PASS

由深圳比克能源有限公司提交的可充式磷酸铁锂电池组按照联合国《关于危险货物运输的建议书，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，第六修订版 (ST/SG/AC.10/11/Rev.6)进行测试。

测试结果：合格

Tested by: 主检人：

Reviewed by: 审核人：

Approved by: 批准人：

Seal of NTEK 报告单位（盖章）

General product information 通用产品信息:			
Nominal Voltage 标称电压	3.2V	Rated Capacity 额定容量	570mAh (1.824Wh)
Standard Charging Current 标准充电电流	114mA	Max. Continuous Charging Current 最大充电电流	285mA
Limited Charging Voltage 充电限制电压	3.65V	Cut-Off Voltage 放电截止电压	2.5V
Standard Continuous Discharge Current 标准放电电流	114mA	Max. Continuous Discharge Current 最大放电电流	570mA
Number of cells 电芯数量	Single cell 单电芯	Rated Capacity of Cell 电芯额定容量	600mAh
Cell's Max. Continuous Discharge Current 电芯最大放电电流	1800mA	Appearance 外观	Blue and Cylindrical 圆柱形、蓝色
Classification 类别	Small Lithium ion Cells 小型锂离子电芯	Size (T×W×L) 尺寸	15.5×54.0mm

Date of receipt of test item 接收日期	2018-08-24	Completion Date 完成日期	2018-10-08

Remarks 备注说明:

Batteries of A1#-A10# are fully charged at first cycle;

Component cells of A11#-A15# at 50% charged of the design rated capacity at first cycle;

Batteries of A16#-A19# are fully charged at first cycle;

Batteries of A20#-A23# are fully charged after 50 cycles;

Component cells of A24#-A33# are fully discharged at first cycle;

Component cells of A34#-A43# are fully discharged after 50 cycles;

Test environment condition: Room temperature: 15-25°C; Room humidity: 40-70%

电池 A1#-A10#为首次循环满电状态；

元件电池芯 A11#-A15#为首次循环 50%充电状态；

电池 A16#-A19#为首次循环满电状态；

电池 A20#-A23#为 50 个循环后满电状态；

元件电池芯 A24#-A33#为首次循环完全放电状态；

元件电池芯 A34#-A43#为 50 个循环后完全放电状态；

试验环境条件：环境温度：15-25°C；环境湿度：40-70%

Summaries of testing 测试摘要:

Each battery type is subjected to tests T.1 to T.8. 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.

每一种类型的电池均应进行T.1至T.8项试验。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的试验应使用未另外试验过的电池。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，可用以下公式计算：

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

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%

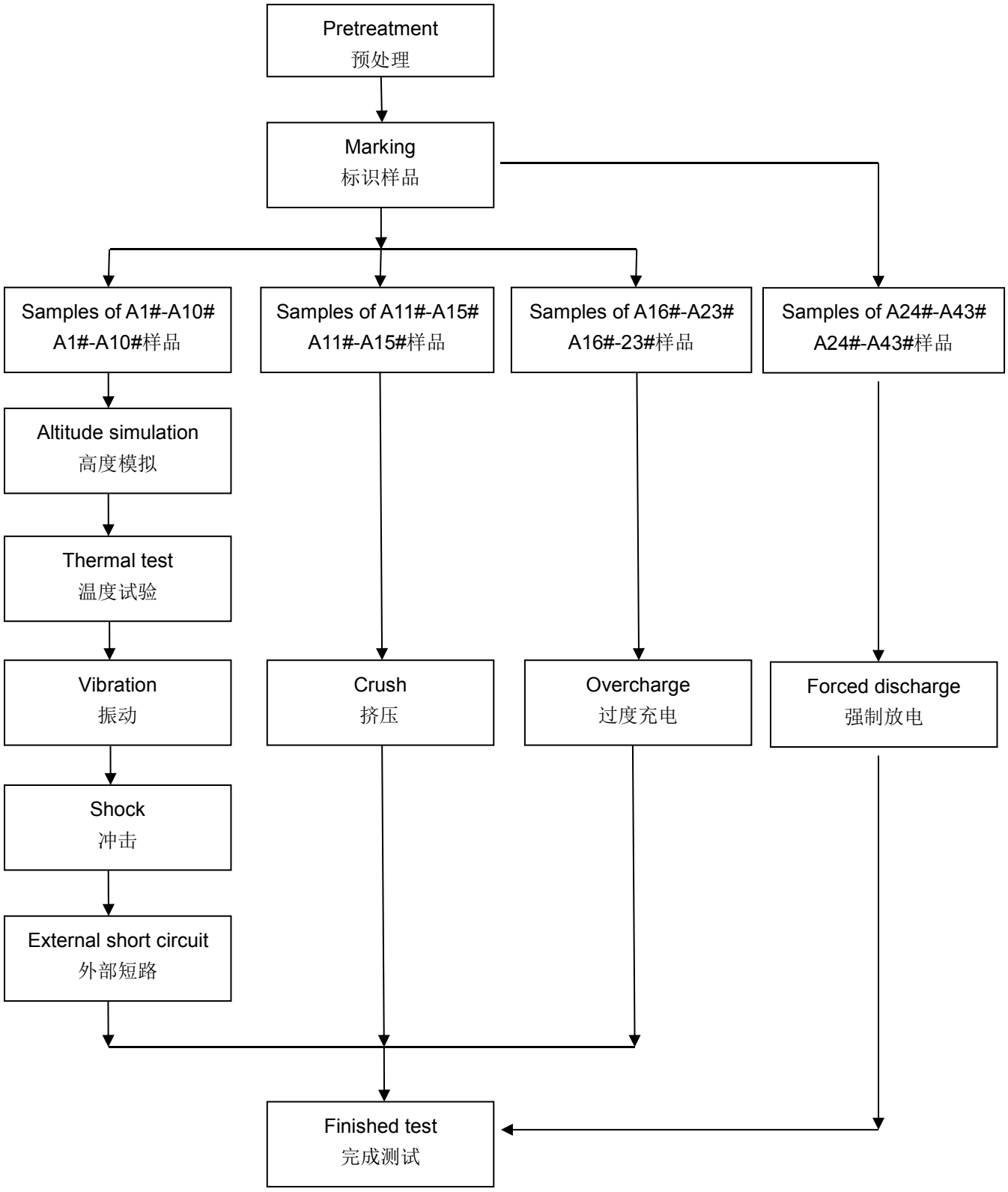
In tests T.1 to T.4, batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test battery after testing is not less than 90% of its voltage immediately prior to this procedure.

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%。

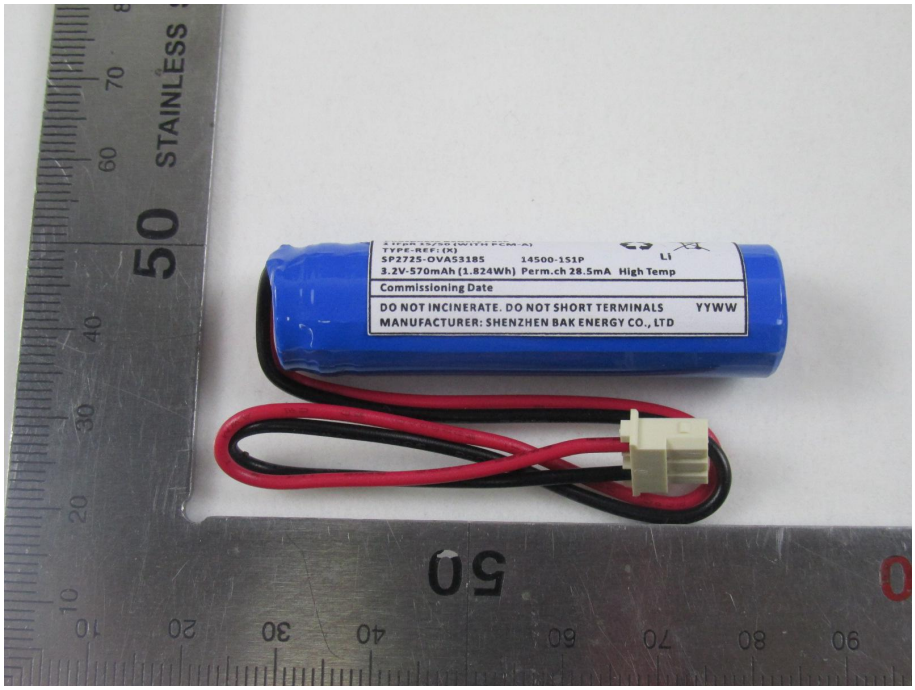
Test equipments 检测设备:

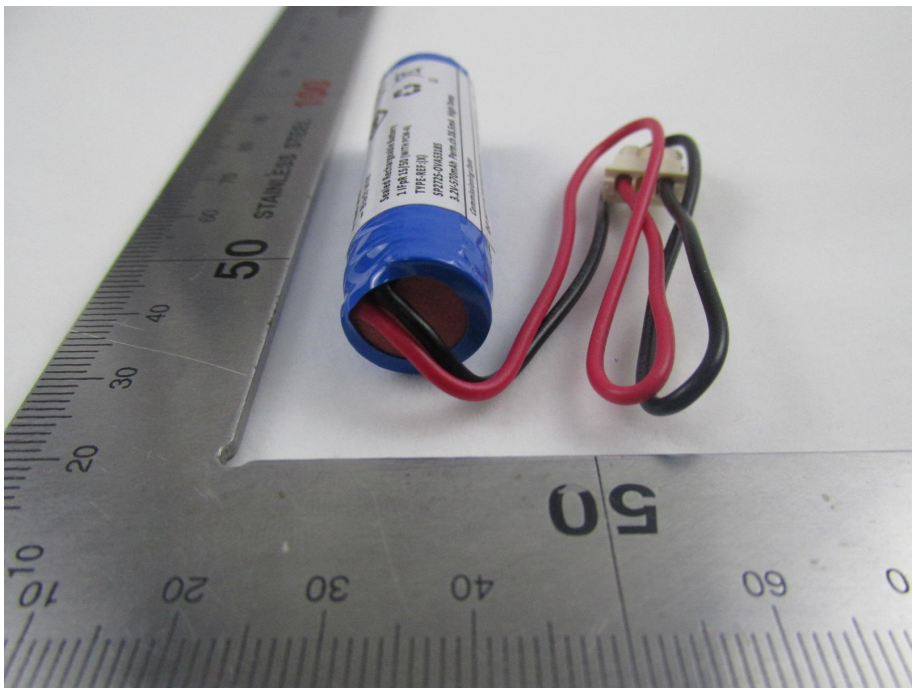
LNS-005 Battery test system 电池检测系统
LNS-006 Electronic balance 电子天平
LNS-007 Low pressure chamber 低气压试验箱
LNS-068 Programmable Temperature Chamber 可程式恒温箱
LNS-008 Vibration test system 振动测试系统
LNS-009 Hydraulic Hoist Vertical Shock System 液压垂直冲击系统
LNS-010 Short circuit tester 短路测试机
LNS-012 Explosion-proof chamber 防爆箱
LNS-013 DC Source 直流电源
LNS-044 Digital multimeter 数字式万用表
LNS-035 midi Logger 记录仪
LNS-014 Battery crush and acupuncture tester 电池挤压针刺试验机

Test Procedure 测试程序

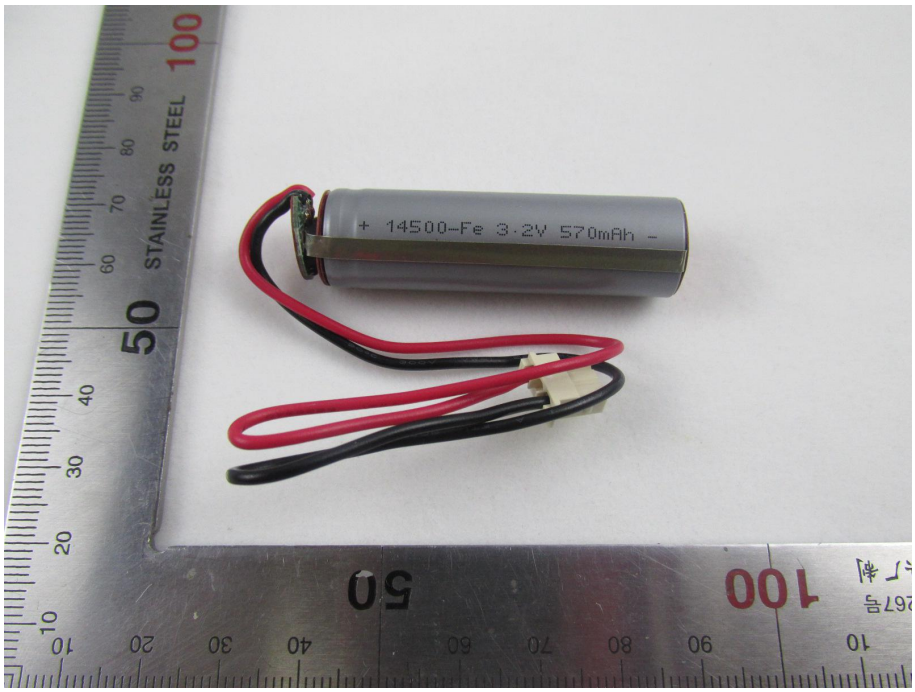


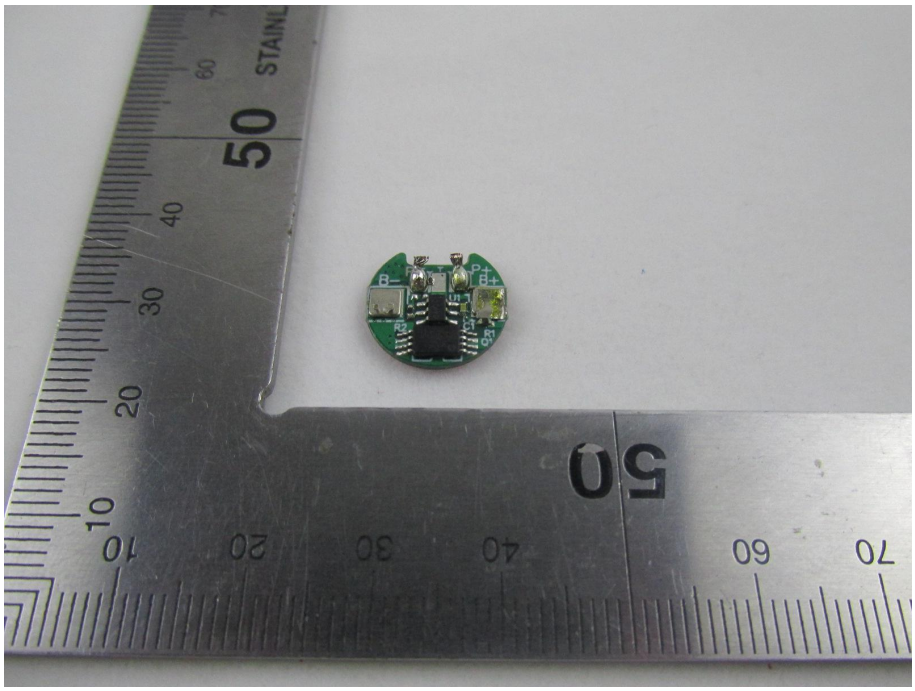
Photos of sample 样品照片



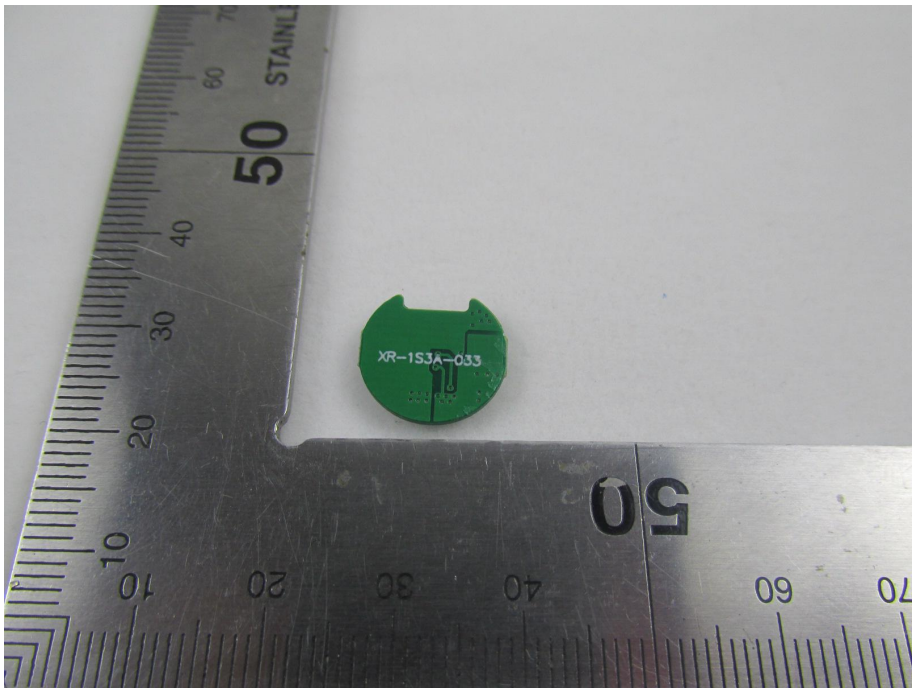


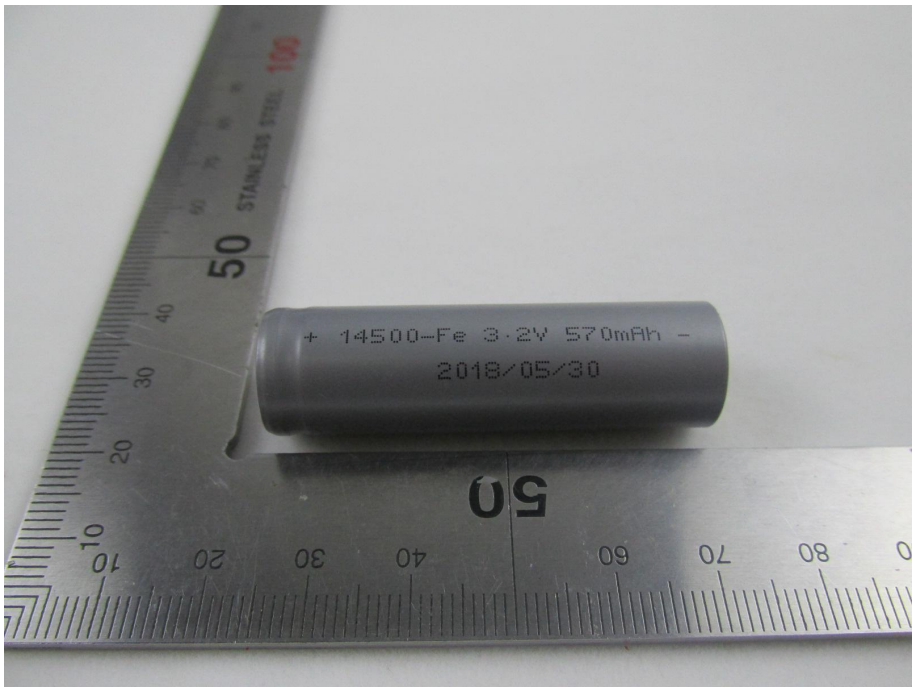
Photos of sample 样品照片



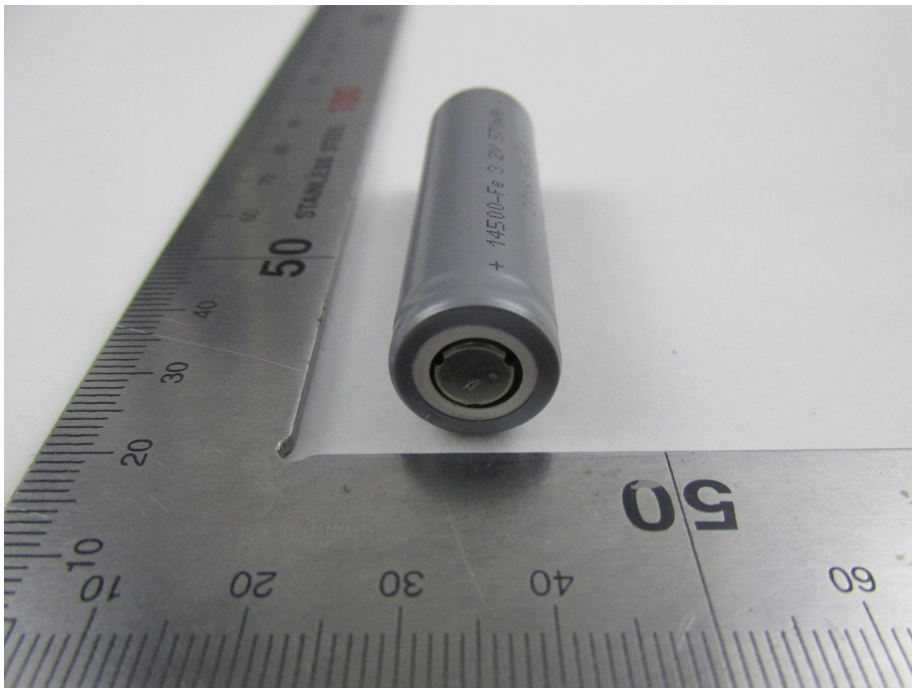


Photos of sample 样品照片





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

State of samples 样品状态	No. 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)			
Fully charged at first cycle 首次循环满电状态	A1#	20.667	3.352	20.666	3.351	0.005	99.97	PASS 合格
	A2#	20.791	3.349	20.790	3.347	0.005	99.94	PASS 合格
	A3#	20.835	3.343	20.834	3.341	0.005	99.94	PASS 合格
	A4#	21.036	3.340	21.035	3.338	0.005	99.94	PASS 合格
	A5#	20.803	3.346	20.801	3.345	0.010	99.97	PASS 合格
	A6#	20.771	3.345	20.770	3.343	0.005	99.94	PASS 合格
	A7#	20.786	3.348	20.784	3.346	0.010	99.94	PASS 合格
	A8#	20.811	3.348	20.809	3.346	0.010	99.94	PASS 合格
	A9#	20.903	3.345	20.901	3.343	0.010	99.94	PASS 合格
	A10#	20.785	3.343	20.784	3.341	0.005	99.94	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: 22.1°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

State of samples 样品状态	No. 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)			
Fully charged at first cycle 首次循环满电状态	A1#	20.666	3.351	20.655	3.340	0.053	99.67	PASS 合格
	A2#	20.790	3.347	20.784	3.338	0.029	99.73	PASS 合格
	A3#	20.834	3.341	20.829	3.332	0.024	99.73	PASS 合格
	A4#	21.035	3.338	21.029	3.327	0.029	99.67	PASS 合格
	A5#	20.801	3.345	20.795	3.336	0.029	99.73	PASS 合格
	A6#	20.770	3.343	20.763	3.335	0.034	99.76	PASS 合格
	A7#	20.784	3.346	20.776	3.337	0.038	99.73	PASS 合格
	A8#	20.809	3.346	20.801	3.337	0.038	99.73	PASS 合格

	A9#	20.901	3.343	20.894	3.335	0.033	99.76	PASS 合格
	A10#	20.784	3.341	20.778	3.331	0.029	99.70	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: 21.8°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，但不得造成电池变形，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池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 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

State of samples 样品状态	No. 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)			

Fully charged at first cycle 首次循环满电状态	A1#	20.655	3.340	20.655	3.338	0.000	99.94	PASS 合格
	A2#	20.784	3.338	20.784	3.338	0.000	100.00	PASS 合格
	A3#	20.829	3.332	20.829	3.330	0.000	99.94	PASS 合格
	A4#	21.029	3.327	21.029	3.325	0.000	99.94	PASS 合格
	A5#	20.795	3.336	20.795	3.333	0.000	99.91	PASS 合格
	A6#	20.763	3.335	20.763	3.333	0.000	99.94	PASS 合格
	A7#	20.776	3.337	20.776	3.335	0.000	99.94	PASS 合格
	A8#	20.801	3.337	20.801	3.334	0.000	99.91	PASS 合格
	A9#	20.894	3.335	20.893	3.333	0.005	99.94	PASS 合格
	A10#	20.778	3.331	20.778	3.330	0.000	99.97	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: 22.7°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组的所有安装面。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

State of samples 样品状态	No. 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)			
Fully charged at first cycle 首次循环满电状态	A1#	20.655	3.338	20.655	3.338	0.00	100.0	PASS 合格
	A2#	20.784	3.338	20.784	3.338	0.00	100.0	PASS 合格
	A3#	20.829	3.330	20.829	3.330	0.00	100.0	PASS 合格
	A4#	21.029	3.325	21.029	3.325	0.00	100.0	PASS 合格
	A5#	20.795	3.333	20.795	3.333	0.00	100.0	PASS 合格
	A6#	20.763	3.333	20.763	3.333	0.00	100.0	PASS 合格
	A7#	20.776	3.335	20.776	3.335	0.00	100.0	PASS 合格
	A8#	20.801	3.334	20.801	3.334	0.00	100.0	PASS 合格
	A9#	20.893	3.333	20.893	3.333	0.00	100.0	PASS 合格
	A10#	20.778	3.330	20.778	3.330	0.00	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: 22.7°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

State of samples 样品状态	No. 编号	Maximum outer casing temperature 电池表面最高温度 (°C)	Results 结果
Fully charged at first cycle 首次循环满电状态	A1#	59.1	PASS 合格
	A2#	58.6	PASS 合格
	A3#	57.1	PASS 合格
	A4#	59.1	PASS 合格
	A5#	60.0	PASS 合格
	A6#	58.9	PASS 合格
	A7#	59.4	PASS 合格
	A8#	59.3	PASS 合格
	A9#	58.7	PASS 合格
	A10#	59.4	PASS 合格

Notes 注释:
There is no disassembly, no rupture and no fire during the test and within six hours after test.
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: 22.7°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。
棱柱形或袋装电池芯须从最宽的面施压。扣式或币式电池芯，须施加挤压力在它的扁平面之间。圆柱形电池芯，挤压力须施加于垂直于电池芯纵轴的方向上。
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

State of samples 样品状态	No. 编号	Maximum outer casing temperature 电池表面最高温度 (°C)	Results 结果
50% charged of the design rated capacity at first cycle 首次循环 50%充电状态	A11#	30.4	PASS 合格
	A12#	29.9	PASS 合格
	A13#	31.6	PASS 合格
	A14#	30.6	PASS 合格
	A15#	32.1	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、未起火。
Room temperature 环境温度: 21.0°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:
(a) 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.
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：
(a) 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组最大充电电压的两倍或22伏两者中的

较小者。

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)..... :	2×285=570mA
Overcharge voltage 过充电电压(Vdc)..... :	2×3.65=7.3V
Duration of the test 过充试验时间(hours)..... :	24 hours

State of samples 样品状态	No. 编号	Results 结果
Fully charged at first cycle 首次循环满电状态	A16#	PASS 合格
	A17#	PASS 合格
	A18#	PASS 合格
	A19#	PASS 合格
Fully charged after fifty cycles 50 次循环后满电状态	A20#	PASS 合格
	A21#	PASS 合格
	A22#	PASS 合格
	A23#	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: 22.7°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。

元件电池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)..... :	1800mA
Supply voltage 试验电压(Vdc)..... :	12Vdc
Time interval 试验时间(Minutes)..... :	20 Minutes

State of samples 样品状态	No. 编号	Results 结果
Fully discharged at first cycle 首次循环完全放电状态	A24#	PASS 合格
	A25#	PASS 合格
	A26#	PASS 合格
	A27#	PASS 合格
	A28#	PASS 合格
	A29#	PASS 合格
	A30#	PASS 合格
	A31#	PASS 合格
	A32#	PASS 合格
	A33#	PASS 合格
Fully discharged after fifty cycles 50 个循环后完全放电状态	A34#	PASS 合格
	A35#	PASS 合格
	A36#	PASS 合格
	A37#	PASS 合格
	A38#	PASS 合格
	A39#	PASS 合格
	A40#	PASS 合格
	A41#	PASS 合格
	A42#	PASS 合格
	A43#	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: 22.0°C

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

Important

注意事项

1. The test report is invalid without the Report Seal of NTEK and Paging seal of NTEK.
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   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。

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