

UN38.3 Test Report

UN38.3 检测报告

Name of Products:	Mobile power supply 103450
产品名称:	移动电源 103450
Client:	ROOFER ELECTRONIC TECHNOLOGY (SHANWEI) CO., LTD
委托单位:	路华电子科技(汕尾)有限公司
Manufacturer:	ROOFER ELECTRONIC TECHNOLOGY (SHANWEI) CO., LTD
制造商:	路华电子科技(汕尾)有限公司
Date of issue:	2019-02-21
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	ROOFER ELECTRONIC TECHNOLOGY (SHANWEI) CO., LTD 路华电子科技(汕尾)有限公司	
Address of manufacturer 制造商地址	Roofers industrial zone, Hexi Town LuFeng, Guangdong, P.R.China 广东省陆丰市河西镇路华工业园	
Factory 工厂	ROOFER ELECTRONIC TECHNOLOGY (SHANWEI) CO., LTD 路华电子科技(汕尾)有限公司	
Address of factory 工厂地址	Roofers industrial zone, Hexi Town LuFeng, Guangdong, P.R.China 广东省陆丰市河西镇路华工业园	
Name of Products 产品名称	Mobile power supply 移动电源	
Model/type reference 型号	103450	
Ratings 额定参数	Output: DC 5V/1000mA 输出: DC 5V/1000mA	
Tested according to 测试依据: Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Tests and Criteria, PART III, section 38.3 Lithium metal and lithium ion batteries, the sixth revised edition, amendment 1 (ST/SG/AC.10/11/Rev.6/Amend.1). 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, 第六修订版修正 1 (ST/SG/AC.10/11/Rev.6/Amend.1)		
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.8: Forced discharge 试验 T.8: 强制放电 Test T.4: Shock 试验 T.4: 冲击		
Test Conclusion 试验结论: The Mobile power submitted by ROOFER ELECTRONIC TECHNOLOGY (SHANWEI) CO., LTD is tested according to the <i>Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Tests and Criteria, PART III, section 38.3 Lithium metal and lithium ion batteries, the sixth revised edition, amendment 1 (ST/SG/AC.10/11/Rev.6/Amend.1)</i> . Test results: PASS 由路华电子科技(汕尾)有限公司提交的移动电源按照联合国《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, 第六修订版修正 1 (ST/SG/AC.10/11/Rev.6/Amend.1) 进行测试。 测试结果: 合格		
Tested by: 主检人:	KK Yu 玉雪梅	玉雪梅
Reviewed by: 审核人:	Kaman Qiu 邱嘉文	邱嘉文
Approved by: 批准人:	Jesse Zhang 张士杰	张士杰
		Seal of NTEK 报告单位(盖章)

General product information 通用产品信息:			
Designed parameters of the internal polymer Lithium Ion Cell 内部聚合物锂离子电池规格参数:			
Nominal Voltage 标称电压	3.7V	Rated Capacity 额定容量	1800mAh
Standard Charging Current 标准充电电流	300mA	Nominal energy / Watt-hour rating 额定能量/额定瓦时	6.65Wh
Limited Charging Voltage 充电限制电压	4.2V	Max. Continuous Charging Current 最大充电电流	1500mA
Cut-Off Voltage 放电截止电压	2.75V	Max. Continuous Discharge Current 最大放电电流	1500mA
Appearance 外观	Silvery and Prismatic 银色、棱柱形	Model/type reference 型号名	SJY 103450
Classification 类别	Small Lithium ion Cells 小型锂离子电池	Dimension (T×W×H) 尺寸	10.0×34.0×50.0mm
Designed parameters of the Mobile power supply 移动电源规格参数:			
Input voltage 输入电压	-	Max. input current 最大输入电流	-
Output voltage 输出电压	4.7V~5.22V	Max. output current 最大输出电流	1.0A
Rated Capacity 额定容量	1800mAh	Appearance 外观	White and Prismatic 白色、棱柱形
Classification 类别	Small Lithium ion Cells 小型锂离子电池	Dimension (T×W×L) 尺寸	11.5×54.2×60.5mm

Date of receipt of test item 接收日期	2019-01-23	Completion Date 完成日期	2019-02-21
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Remarks 备注说明: Batteries of #S190118008001-001 ~ #S190118008001-005 are fully charged at first cycle; Batteries of #S190118008001-006 ~ #S190118008001-010 are fully charged after 25 cycles; Component cells of #S190118008001-011 ~ #S190118008001-015 at 50% of the design rated capacity at first cycle; Component cells of #S190118008001-016 ~ #S190118008001-020 at 50% of the design rated capacity after 25 cycles; Component cells of #S190118008001-021 ~ #S190118008001-030 are fully discharged at first cycle; Component cells of #S190118008001-031 ~ #S190118008001-040 are fully discharged after 25 cycles; Test environment condition: Room temperature: 15-25°C; Room humidity: 40-70% 电池#S190118008001-001 ~ #S190118008001-005 为首次循环满电状态; 电池#S190118008001-006 ~ #S190118008001-010 为 25 次循环后满电状态;
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元件电池芯#S190118008001-011 ~ #S190118008001-015 为首次循环 50%电荷状态;
 元件电池芯#S190118008001-016 ~ #S190118008001-020 为 25 次循环后 50%电荷状态;
 元件电池芯#S190118008001-021 ~ #S190118008001-030 为首次循环完全放电状态;
 元件电池芯#S190118008001-031 ~ #S190118008001-040 为 25 次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%

Manufacturer's contact information 制造商联系信息:

Phone number 电话号码: +86-755-33239825
 Email address 电子邮件地址: hmpz@roofer.com.cn
 Website 网址: -

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".

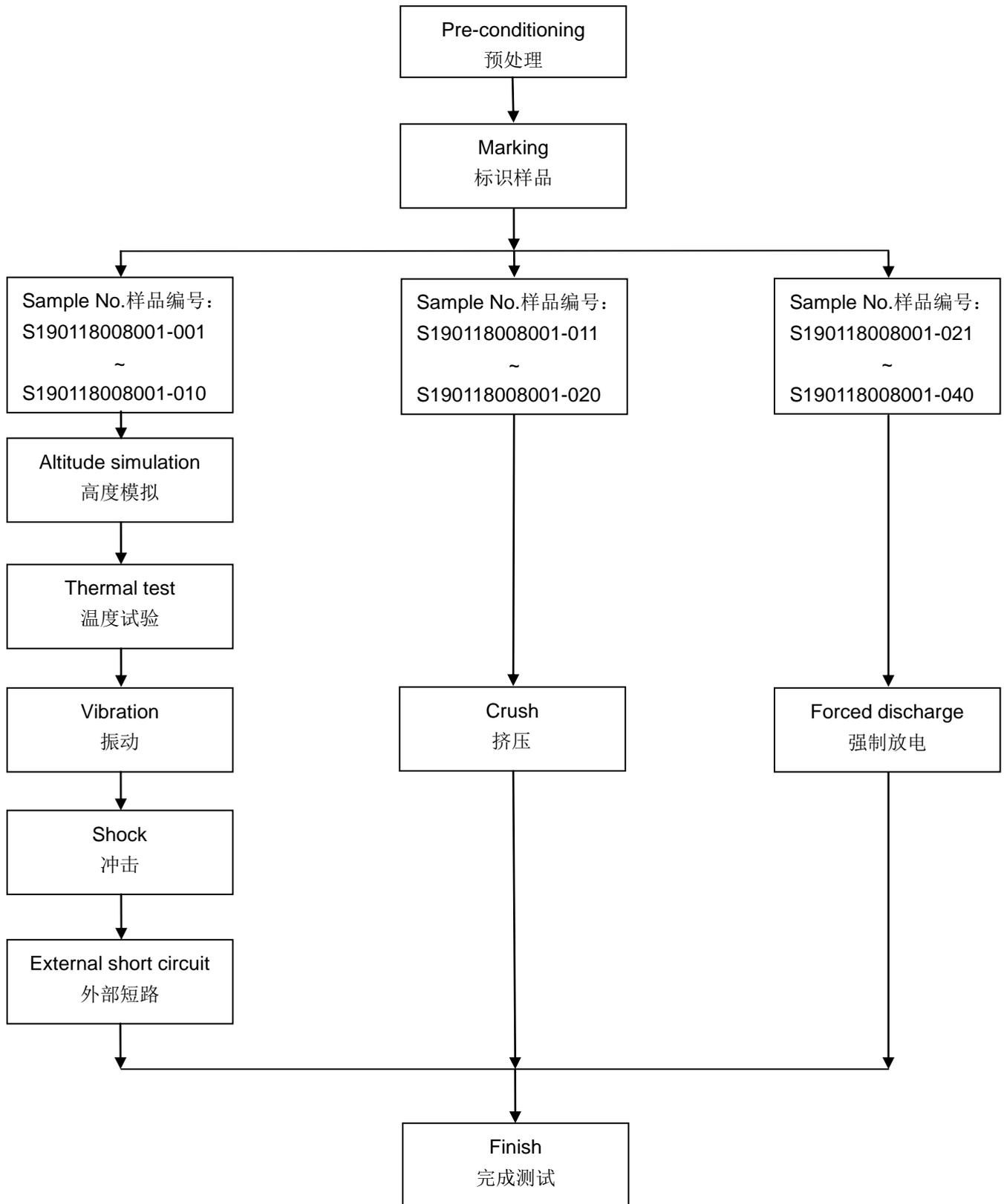
式中: M_1 是试验前的质量, M_2 是试验后的质量。如果质量损失不超过下表所列的数值, 应视为“无质量损失”。

Mass M of cell or battery 电芯或电池的质量	Mass loss limit 质量损失限值
$M < 1\text{g}$	0.5%
$1\text{g} \leq M \leq 75\text{g}$	0.2%
$M > 75\text{g}$	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



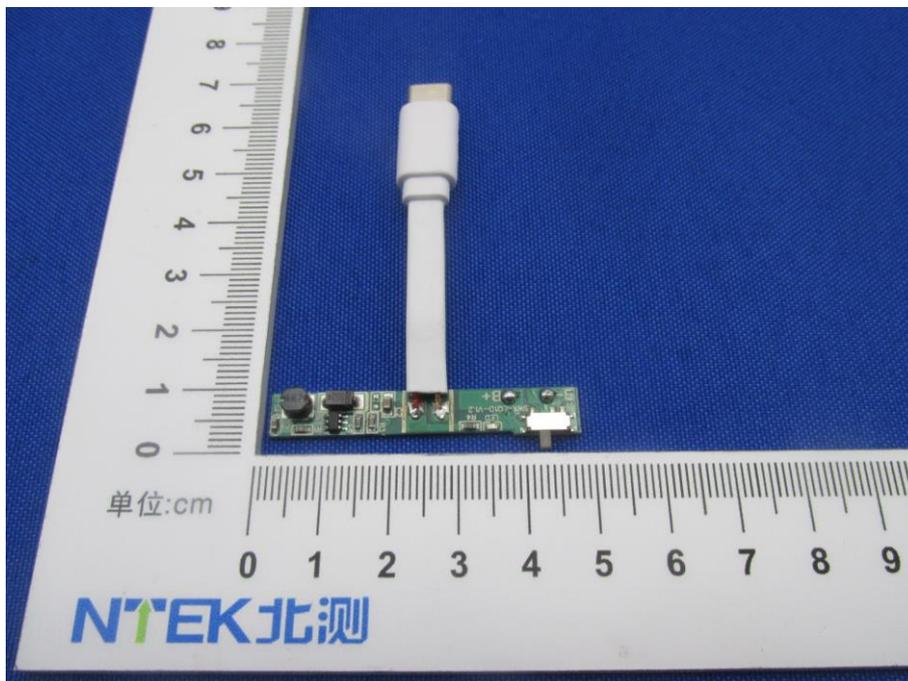
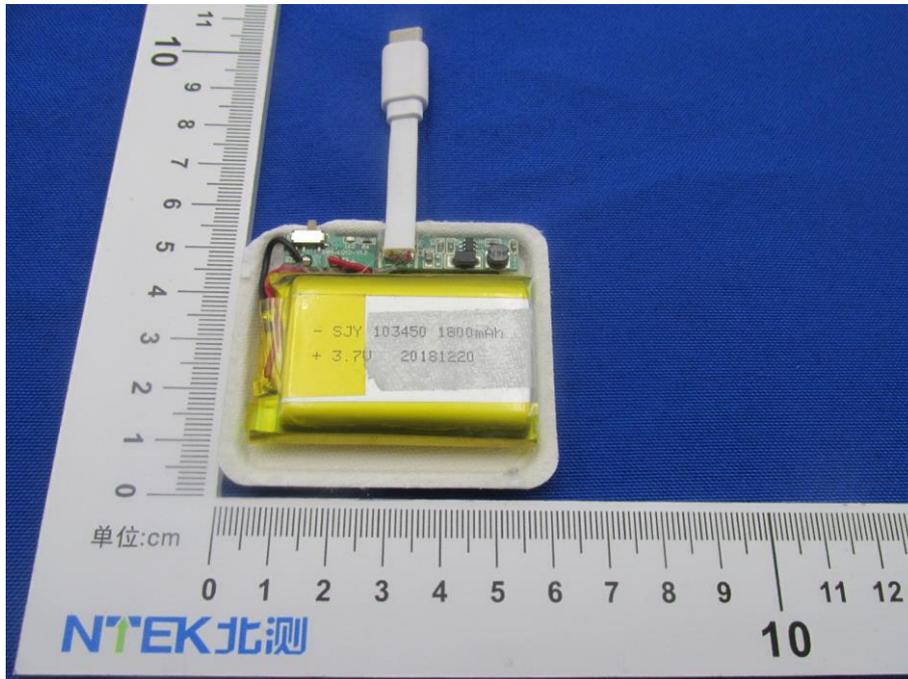
Photos of sample 样品照片



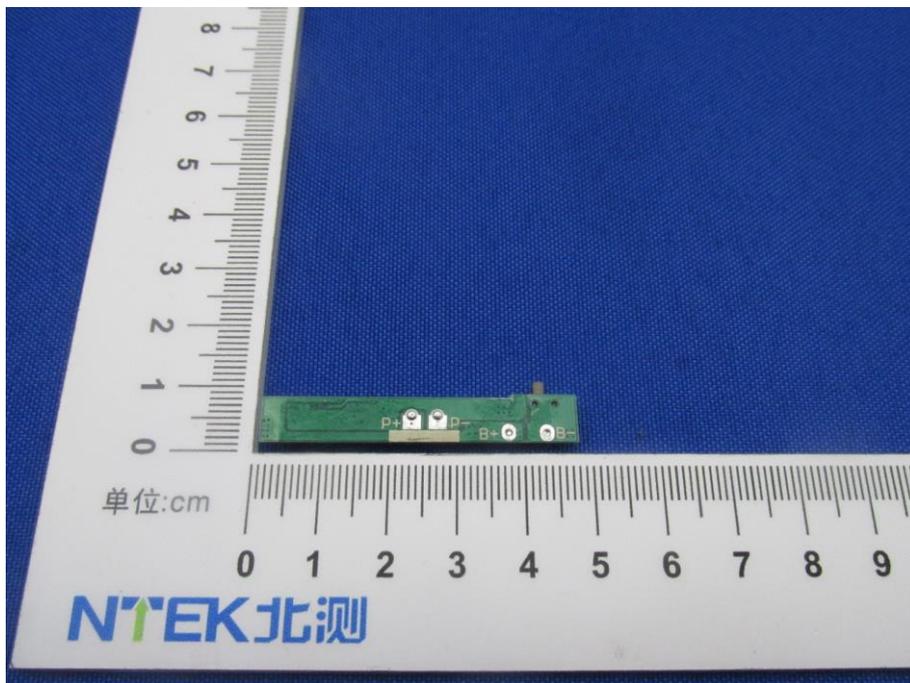
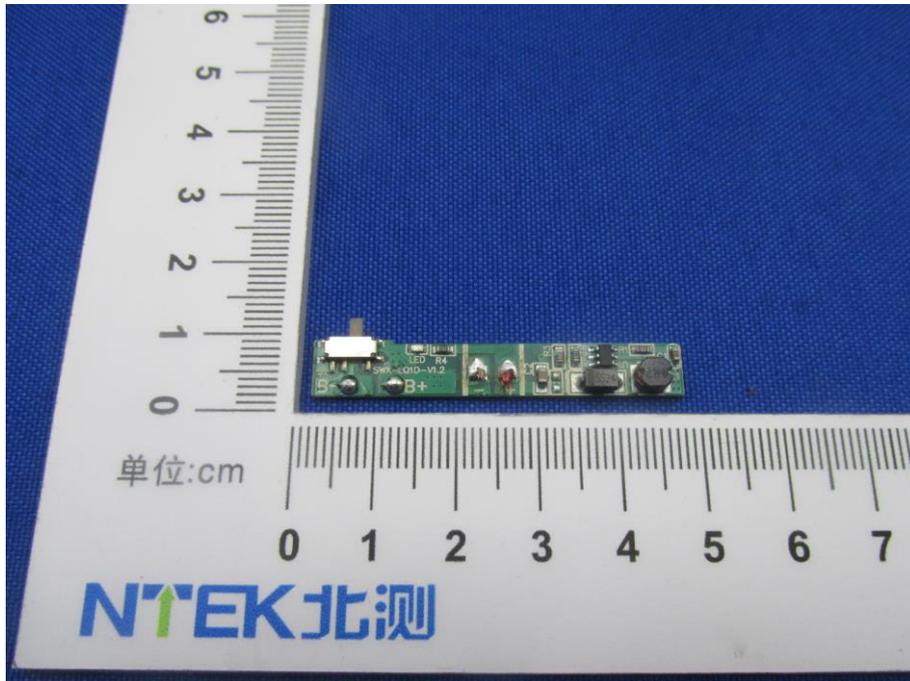
Photos of sample 样品照片



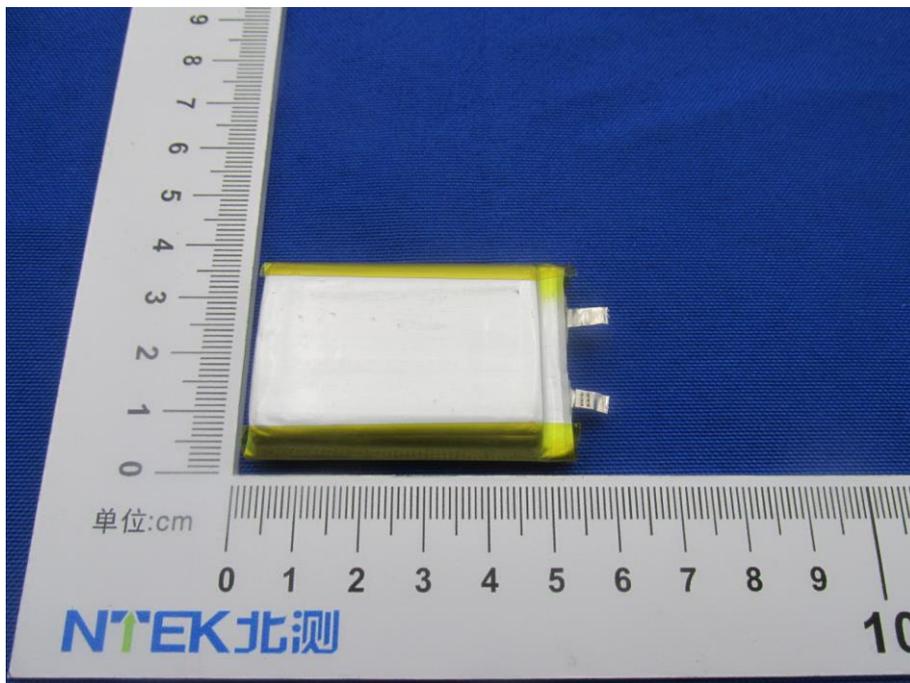
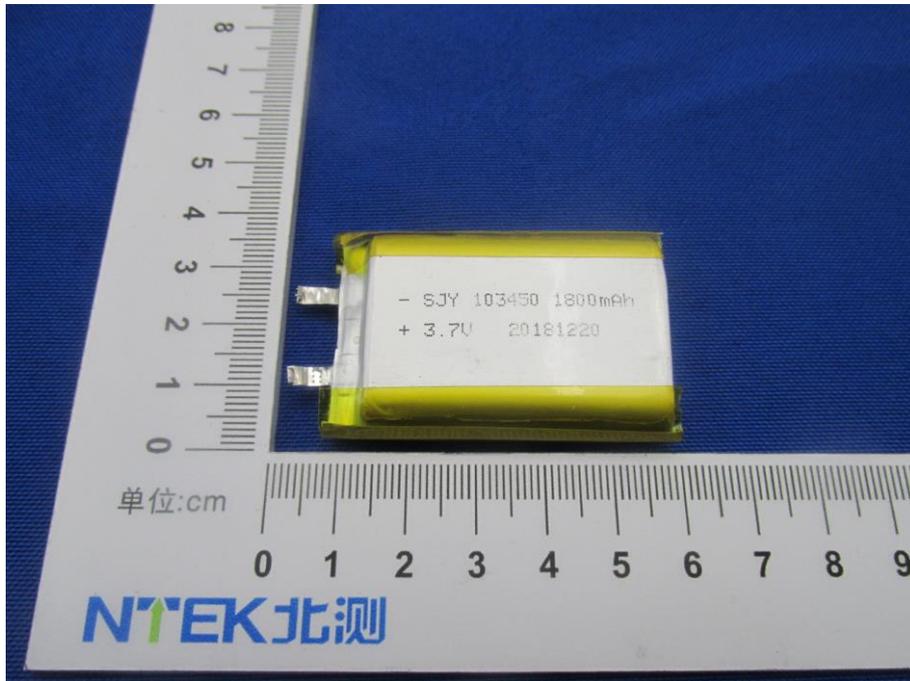
Photos of sample 样品照片



Photos of sample 样品照片



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 ($20 \pm 5^\circ\text{C}$).
 试验电池被放置在压力等于或低于11.6 kPa和环境温度($20\pm 5^\circ\text{C}$)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)			
At first cycle, in fully charged states 首次循环满电状态	S19011800 8001-001	42.470	5.184	42.470	5.184	0.000	100.0	PASS 合格
	S19011800 8001-002	42.216	5.187	42.216	5.187	0.000	100.0	PASS 合格
	S19011800 8001-003	41.805	5.205	41.805	5.205	0.000	100.0	PASS 合格
	S19011800 8001-004	42.784	5.214	42.784	5.214	0.000	100.0	PASS 合格
	S19011800 8001-005	42.111	5.196	42.111	5.195	0.000	99.98	PASS 合格
After 25 cycles ending in fully charged states 25次循环后满电状态	S19011800 8001-006	42.499	5.208	42.499	5.208	0.000	100.0	PASS 合格
	S19011800 8001-007	42.368	5.213	42.368	5.213	0.000	100.0	PASS 合格
	S19011800 8001-008	41.932	5.188	41.932	5.188	0.000	100.0	PASS 合格
	S19011800 8001-009	42.353	5.168	42.353	5.167	0.000	99.98	PASS 合格
	S19011800 8001-010	42.318	5.192	42.318	5.192	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: 21.6°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 $72 \pm 2^\circ\text{C}$, followed by storage for at least six hours at a test temperature equal to $-40 \pm 2^\circ\text{C}$. 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 ($20 \pm 5^\circ\text{C}$).

电池放置在试验温度等于 $72 \pm 2^\circ\text{C}$ 的条件下存放至少6小时,接着再在试验温度等于 $-40 \pm 2^\circ\text{C}$ 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($20 \pm 5^\circ\text{C}$)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)			
At first cycle, in fully charged states 首次循环满电状态	S19011800 8001-001	42.470	5.184	42.458	5.142	0.028	99.19	PASS 合格
	S19011800 8001-002	42.216	5.187	42.205	5.143	0.026	99.15	PASS 合格
	S19011800 8001-003	41.805	5.205	41.795	5.161	0.024	99.15	PASS 合格
	S19011800 8001-004	42.784	5.214	42.770	5.175	0.033	99.25	PASS 合格
	S19011800 8001-005	42.111	5.195	42.100	5.149	0.026	99.11	PASS 合格
After 25 cycles ending in fully charged states 25次循环后满	S19011800 8001-006	42.499	5.208	42.488	5.161	0.026	99.10	PASS 合格
	S19011800 8001-007	42.368	5.213	42.356	5.169	0.028	99.16	PASS 合格
	S19011800 8001-008	41.932	5.188	41.918	5.145	0.033	99.17	PASS 合格

电状态	S19011800 8001-009	42.353	5.167	42.338	5.126	0.035	99.21	PASS 合格
	S19011800 8001-010	42.318	5.192	42.306	5.146	0.028	99.11	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: 21.6°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 0.8 mm (总位移 1.6 mm), 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

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)			
At first cycle, in fully	S19011800 8001-001	42.458	5.142	42.456	5.142	0.005	100.0	PASS 合格

charged states 首次循环满电状态	S19011800 8001-002	42.205	5.143	42.205	5.143	0.000	100.0	PASS 合格
	S19011800 8001-003	41.795	5.161	41.795	5.160	0.000	99.98	PASS 合格
	S19011800 8001-004	42.770	5.175	42.768	5.175	0.005	100.0	PASS 合格
	S19011800 8001-005	42.100	5.149	42.100	5.149	0.000	100.0	PASS 合格
After 25 cycles ending in fully charged states 25 次循环后满电状态	S19011800 8001-006	42.488	5.161	42.488	5.161	0.000	100.0	PASS 合格
	S19011800 8001-007	42.356	5.169	42.356	5.169	0.000	100.0	PASS 合格
	S19011800 8001-008	41.918	5.145	41.918	5.144	0.000	99.98	PASS 合格
	S19011800 8001-009	42.338	5.126	42.336	5.126	0.005	100.0	PASS 合格
	S19011800 8001-010	42.306	5.146	42.306	5.145	0.000	99.98	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: 22.1°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 g_n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)			
At first cycle, in fully charged states 首次循环满电状态	S19011800 8001-001	42.456	5.142	42.456	5.142	0.000	100.0	PASS 合格
	S19011800 8001-002	42.205	5.143	42.205	5.143	0.000	100.0	PASS 合格
	S19011800 8001-003	41.795	5.160	41.795	5.160	0.000	100.0	PASS 合格
	S19011800 8001-004	42.768	5.175	42.768	5.175	0.000	100.0	PASS 合格
	S19011800 8001-005	42.100	5.149	42.100	5.149	0.000	100.0	PASS 合格
After 25 cycles ending in fully charged states 25 次循环后满电状态	S19011800 8001-006	42.488	5.161	42.488	5.161	0.000	100.0	PASS 合格
	S19011800 8001-007	42.356	5.169	42.356	5.169	0.000	100.0	PASS 合格
	S19011800 8001-008	41.918	5.144	41.918	5.144	0.000	100.0	PASS 合格
	S19011800 8001-009	42.336	5.126	42.336	5.126	0.000	100.0	PASS 合格
	S19011800 8001-010	42.306	5.145	42.305	5.145	0.002	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: 23.2°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
At first cycle, in fully charged states 首次循环满电状态	S190118008001-001	58.7	PASS 合格
	S190118008001-002	58.4	PASS 合格
	S190118008001-003	59.1	PASS 合格
	S190118008001-004	59.1	PASS 合格
	S190118008001-005	58.9	PASS 合格
After 25 cycles ending in fully charged states 25次循环后满电状态	S190118008001-006	58.2	PASS 合格
	S190118008001-007	58.7	PASS 合格
	S190118008001-008	58.3	PASS 合格
	S190118008001-009	59.0	PASS 合格
	S190118008001-010	58.6	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 \pm 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 $13 \text{ kN} \pm 0.78 \text{ kN}$;
- (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

State of samples 样品状态	No. 编号	Maximum outer casing temperature 电池芯表面最高温度 ($^{\circ}\text{C}$)	Results 结果
At first cycle at 50% of the design rated capacity.首次循环 50%电荷状态	S190118008001-011	23.9	PASS 合格
	S190118008001-012	24.3	PASS 合格
	S190118008001-013	24.1	PASS 合格
	S190118008001-014	23.9	PASS 合格
	S190118008001-015	24.4	PASS 合格
After 25 cycles ending at 50% of the design rated capacity. 25次循环后 50%电荷 状态	S190118008001-016	24.2	PASS 合格
	S190118008001-017	24.3	PASS 合格
	S190118008001-018	24.3	PASS 合格
	S190118008001-019	23.8	PASS 合格
	S190118008001-020	24.1	PASS 合格

Notes 注释:

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

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: 22.6°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)	1500mA	
Supply voltage 试验电压(Vdc)	12Vdc	
Time interval 试验时间(Minutes)	72 Minutes	
State of samples 样品状态	No.编号	Results 结果
At first cycle, in fully discharged states 首次循环完全放电状态	S190118008001-021	PASS 合格
	S190118008001-022	PASS 合格
	S190118008001-023	PASS 合格
	S190118008001-024	PASS 合格
	S190118008001-025	PASS 合格
	S190118008001-026	PASS 合格
	S190118008001-027	PASS 合格
	S190118008001-028	PASS 合格
	S190118008001-029	PASS 合格
	S190118008001-030	PASS 合格
After 25 cycles ending in fully discharged states 25 次循环后完全放电状态	S190118008001-031	PASS 合格
	S190118008001-032	PASS 合格
	S190118008001-033	PASS 合格
	S190118008001-034	PASS 合格
	S190118008001-035	PASS 合格
	S190118008001-036	PASS 合格
	S190118008001-037	PASS 合格
	S190118008001-038	PASS 合格
	S190118008001-039	PASS 合格
	S190118008001-040	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 Notice

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