报告编号/Report Reference No.:
NTEK-2017DC0119005S-R1

UN38.3 检 测 报 告
UN38.3 Test Report

产品名称：	锂离子电芯 INR18650-2600A
Name of Samples:	Lithium Ion Cell INR18650-2600A
委托单位：	路华能源科技（保山）有限公司
Client:	Roofer Energy Technology (Baoshan) Co., Ltd.
生产单位：	路华能源科技（保山）有限公司
Manufacturer:	Roofer Energy Technology (Baoshan) Co., Ltd.
签发日期： Date of issue：	2017-04-01

深圳市北测检测技术有限公司

Shenzhen NTEK Testing Technology Co., Ltd.

Sample Description 样品描述:			
Nominal Voltage 标称电压	3.7V	Rated Capacity 额定容量	2600mAh(9.62Wh)
Standard Charging Current 标准充电电流	520mA	Max. Continuous Charging Current 最大充电电流	1300mA
Limited Charging Voltage 充电限制电压	4.2V	Cut-Off Voltage 放电截止电压	3.0V
Max. Discharge Current 最大放电电流	2600mA	Appearance of Samples 样品外观	Pink and Cylindrical 粉红色和圆柱形
Classification of Samples 样品类型	Small Lithium ion Cells 小型锂离子电芯	Size of cell (D×H) 电芯尺寸	18.1×64.9mm

Receiving Date 接收日期	2017-01-19	Completing Date 完成日期	2017-04-01

Remarks 备注说明:

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

Cells of A11#-A15# at 50% of the design rated capacity at first cycle;

Cells of A16#-A25# at first cycle in fully discharged states;

Cells of A26#-A35# are fully discharged after 50 cycles;

Test environment condition: ambient temperature: 15-25℃, ambient humidity: 40-70%

电芯 A1#-A10#为一次循环满电状态；

电芯 A11#-A15#为一次循环后 50%充电状态；

电芯 A16#-A25#为一次循环完全放电状态；

电芯 A26#-A35#为 50 个循环完全放电状态；

试验环境条件：环境温度：15-25℃，环境湿度：40-70%

Summaries of testing 测试摘要:

Each cell type is subjected to tests T.1 to T.8. Tests T.1 to T.5 are conducted in sequence on the same cells. Tests 6 and 8 are conducted using not otherwise tested cells.

每一种类型的电芯均应进行T.1至T.8项试验。电芯必须按顺序在相同的一组电芯上进行试验T.1至T.5。试验T.6和T.8应使用未另外试验过的电芯。

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

$$\text{Mass loss}(\%)=(M_1-M_2)/M_1\times100$$

为了量化质量损失，可用以下公式计算：

$$\text{质量损失}(\%)=(M_1-M_2)/M_1\times100$$

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”。

Client 委托单位	Roofer Energy Technology (Baoshan) Co., Ltd. 路华能源科技（保山）有限公司
Address 地址	Roofer Industrial Zone, Baoshan Industrial Park, Longyang District, Baoshan, Yunnan, P.R. China 云南省保山市隆阳区保山工贸园区路华工业园
Manufacturer 制造商	Roofer Energy Technology (Baoshan) Co., Ltd. 路华能源科技（保山）有限公司
Address 地址	Roofer Industrial Zone, Baoshan Industrial Park, Longyang District, Baoshan, Yunnan, P.R. China 云南省保山市隆阳区保山工贸园区路华工业园
Name of samples 样品名称	Lithium Ion Cell 锂离子电芯
Model/type reference 型号	INR18650-2600A
Trademark 商标	ROOFER

Tested according to 测试依据:

Amendments to the Fifth Revised Edition of the Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria, section 38.3 lithium batteries (ST/SG/AC.10/11/Rev.5/Amend.2 section 38.3).

联合国《关于危险货物运输的建议书，试验和标准手册》，第五修订版修正 2，第三部分，38.3 节锂电池要求 (ST/SG/AC.10/11/Rev.5/Amend.2 第 38.3 节)

Test items 测试项目:

Test T.1: Altitude simulation 测试 T.1 高度模拟
Test T.2: Thermal Test 测试 T.2 温度试验
Test T.3: Vibration 测试 T.3 振动
Test T.4: Shock 测试 T.4 冲击
Test T.5: External short circuit 测试 T.5 外部短路
Test T.6: Impact 测试 T.6 撞击
Test T.8: Forced discharge 测试 T.8 强制放电

Test Conclusion 测试结论:

The Lithium Ion Cell submitted by Roofer Energy Technology (Baoshan) Co., Ltd. tested according to Section 38.3 of Amendments to the Fifth Revised Edition of the Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria (ST/SG/AC.10/11/Rev.5/Amend.2).

Test results: PASS

由路华能源科技（保山）有限公司提交的锂离子电芯按照联合国《关于危险货物运输的建议书，试验和标准手册》，第五修订版修正 2，第三部分，38.3 节锂电池要求(ST/SG/AC.10/11/Rev.5/Amend.2 第 38.3 节)进行测试。

测试结果：合格

Tested by: 主检人: 蔡锦忠

Reviewed by: 审核人:

Approved by: 批准人:

Seal of NTEK 报告单位（盖章）

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%

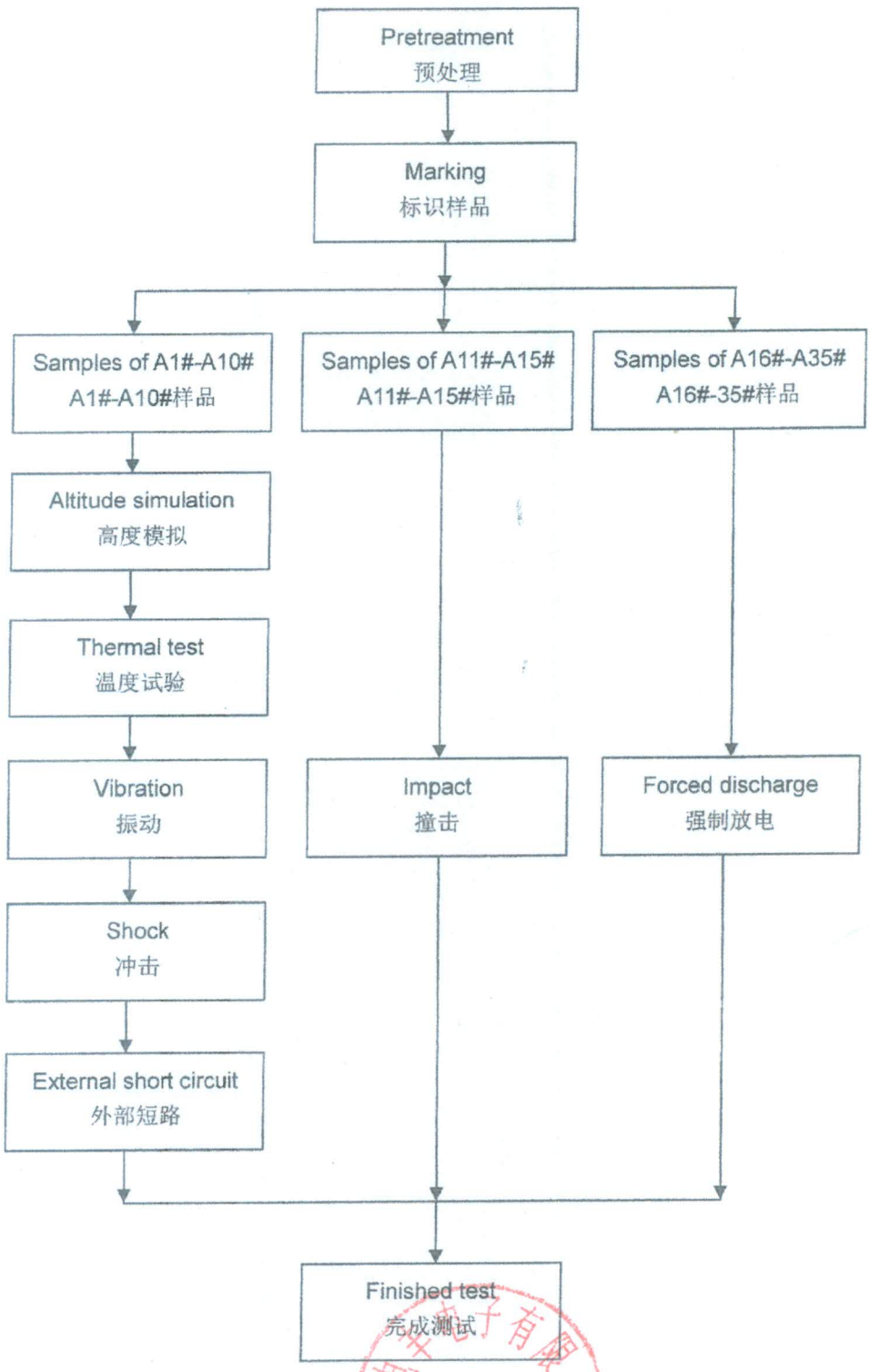
In test T.1 to T.4, cells meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell after testing is not less than 90% of its voltage immediately prior to this procedure.

在测试T.1至T.4中，电芯须满足无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电芯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%。

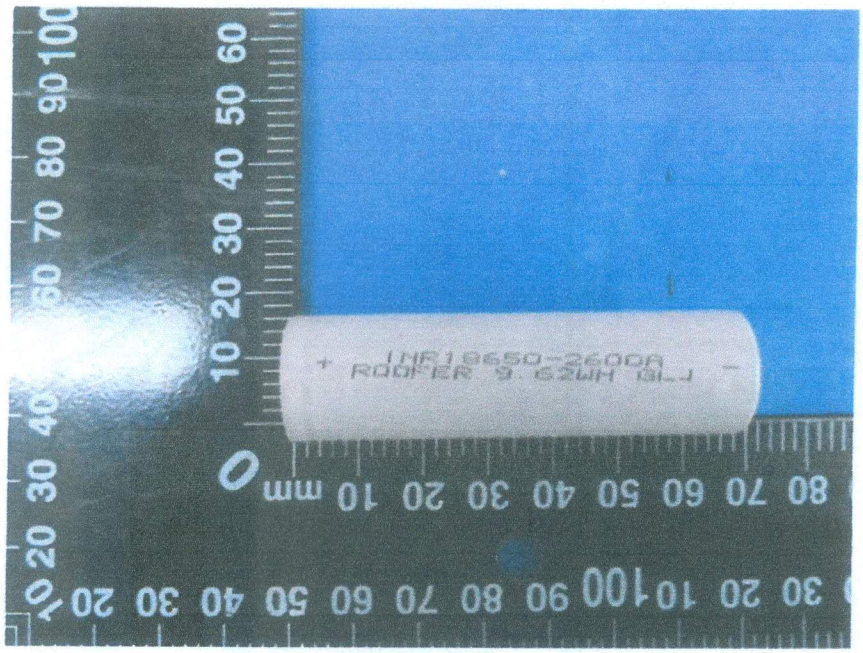
Test equipments 检测设备:

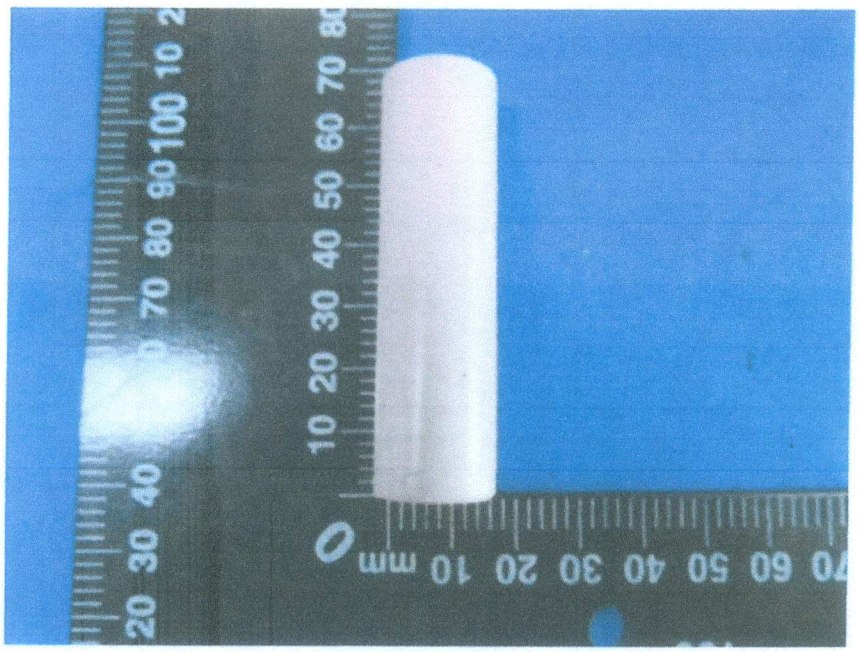
N170 Battery test system 电池检测系统
N171 Electronic balance 电子天平
N172 Low pressure chamber 低气压试验箱
N077 Programmable Temperature & Humidity Controller 可程式恒温恒湿箱
N173 Vibration test system 振动测试系统
N174 Hydraulic Hoist Vertical Shock System 液压垂直冲击系统
N175 Short circuit tester 短路测试机
N177 Explosion-proof chamber 防爆箱
N178 DC Source 直流电源
N180 Digital multimeter 数字式万用表
N185 uR1000 recorder uR1000 记录仪
N176 Battery Impact tester 电池撞击试验机

Test Procedure 测试程序



Photos of sample 样品照片





Test results 测试结果:

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

Test method 测试方法

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

Requirement 要求

Cells 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 after testing is not less than 90% of its voltage immediately prior to this procedure.
电芯须无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电芯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 sample 样品状态	No. 编号	Pre-test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage pre-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 一次循环后满电状态	A1#	46.242	4.17	46.242	4.17	0.00	100.0	PASS 合格
	A2#	46.107	4.18	46.107	4.18	0.00	100.0	PASS 合格
	A3#	45.468	4.18	45.468	4.18	0.00	100.0	PASS 合格
	A4#	46.362	4.17	46.362	4.17	0.00	100.0	PASS 合格
	A5#	46.044	4.18	46.044	4.18	0.00	100.0	PASS 合格
	A6#	46.108	4.17	46.108	4.17	0.00	100.0	PASS 合格
	A7#	46.193	4.17	46.193	4.17	0.00	100.0	PASS 合格
	A8#	46.293	4.18	46.293	4.18	0.00	100.0	PASS 合格
	A9#	46.507	4.17	46.507	4.17	0.00	100.0	PASS 合格
	A10#	45.870	4.17	45.870	4.17	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，电芯未渗漏、未泄气、未解体、未破裂和未起火。
Ambient temperature 环境温度: 23.0℃

Test T.2: Thermal test 测试T.2：温度试验

Test method 测试方法
Cells are to be stored for at least six hours at a test temperature equal to 72 ± 2℃, followed by storage for at least six hours at a test temperature equal to -40 ± 2℃. The maximum time interval between test temperature extremes is 30 minutes. This procedure is to be repeated 10 times, after which all test cells are to be stored for 24 hours at ambient temperature (20 ± 5℃).
电芯放置在试验温度等于72±2℃的条件下存放至少6小时，接着再在试验温度等于-40±2℃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，接着将所有试验电芯在环境温度(20±5℃)下存放24小时。
Requirement 要求
Cells 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 after testing is not less than 90% of its voltage immediately prior to this procedure.
电芯须无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电芯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 sample 样品状态	No. 编号	Pre-test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage pre-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 一次循环后满电状态	A1#	46.242	4.17	46.229	4.14	0.028	99.28	PASS 合格
	A2#	46.107	4.18	46.091	4.15	0.035	99.28	PASS 合格
	A3#	45.468	4.18	45.457	4.15	0.024	99.28	PASS 合格
	A4#	46.362	4.17	46.349	4.14	0.028	99.28	PASS 合格
	A5#	46.044	4.18	46.031	4.14	0.028	99.04	PASS 合格
	A6#	46.108	4.17	46.096	4.15	0.026	99.52	PASS 合格
	A7#	46.193	4.17	46.180	4.13	0.028	99.04	PASS 合格
	A8#	46.293	4.18	46.279	4.15	0.030	99.28	PASS 合格

	A9#	46.507	4.17	46.495	4.14	0.026	99.28	PASS 合格
	A10#	45.870	4.17	45.858	4.14	0.026	99.28	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，电芯未渗漏、未泄气、未解体、未破裂和未起火。

Ambient temperature 环境温度: 21.0℃

Test T.3: Vibration 测试T.3：振动

Test method 测试方法

Cells 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.

电芯紧固于振动台台面，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

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

电芯须无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电芯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 sample 样品状态	No. 编号	Pre-test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage pre-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	A1#	46.229	4.14	46.229	4.14	0.00	100.0	PASS

fully charged states 一次循环后满电状态								合格
	A2#	46.091	4.15	46.091	4.15	0.00	100.0	PASS 合格
	A3#	45.457	4.15	45.457	4.15	0.00	100.0	PASS 合格
	A4#	46.349	4.14	46.349	4.14	0.00	100.0	PASS 合格
	A5#	46.031	4.14	46.031	4.14	0.00	100.0	PASS 合格
	A6#	46.096	4.15	46.096	4.15	0.00	100.0	PASS 合格
	A7#	46.180	4.13	46.180	4.13	0.00	100.0	PASS 合格
	A8#	46.279	4.15	46.279	4.15	0.00	100.0	PASS 合格
	A9#	46.495	4.14	46.495	4.14	0.00	100.0	PASS 合格
	A10#	45.858	4.14	45.858	4.14	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，电芯未渗漏、未泄气、未解体、未破裂和未起火。

Ambient temperature 环境温度: 19.0℃

Test T.4: Shock 测试 T.4：冲击

Test method 测试方法

Cells are secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test cell. Each cell is subjected to a half-sine shock of peak acceleration of 150 g_n and pulse duration of 6 milliseconds. Each cell 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.

试验电芯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。每个电芯须经受峰值加速度150 gn和脉冲持续时间6 ms的半正弦波冲击。每个电芯须在三个互相垂直的电芯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

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

电芯须无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电芯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 sample 样品状态	No. 编号	Pre-test 试验前		After test 试验后		Mass loss 质量损失 (%)	Voltage after test/ voltage pre-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 一次循环后满电状态	A1#	46.229	4.14	46.229	4.14	0.00	100.0	PASS 合格
	A2#	46.091	4.15	46.091	4.15	0.00	100.0	PASS 合格
	A3#	45.457	4.15	45.457	4.15	0.00	100.0	PASS 合格
	A4#	46.349	4.14	46.349	4.14	0.00	100.0	PASS 合格
	A5#	46.031	4.14	46.031	4.14	0.00	100.0	PASS 合格
	A6#	46.096	4.15	46.096	4.15	0.00	100.0	PASS 合格
	A7#	46.180	4.13	46.180	4.13	0.00	100.0	PASS 合格
	A8#	46.279	4.15	46.279	4.15	0.00	100.0	PASS 合格
	A9#	46.495	4.14	46.495	4.14	0.00	100.0	PASS 合格
	A10#	45.858	4.14	45.858	4.14	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，电芯未渗漏、未泄气、未解体、未破裂和未起火。

Ambient temperature 环境温度: 21.7℃

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

Test method 测试方法

Cells to be tested are temperature stabilized so that its external case temperature reaches 55 ± 2℃ and then the cell are subjected to a short circuit condition with a total external resistance of less than 0.1 ohm at 55 ± 2℃. This short circuit condition is continued for at least one hour after the cell external case temperature has returned to 55 ± 2℃. The cell is observed for a further six hours for the test to be concluded.

试验电芯在测试温度下放置至稳定状态，使其外壳温度达到55±2℃，然后使电芯在55±2℃下经受总外电阻小于0.1Ω的短路条件。短路测试持续到电芯外壳温度回到55±2℃后继续至少1小时。试验电芯被观察6小时再下结论。

Requirement 要求

Cells meet this requirement if their external temperature does not exceed 170℃ and there is no disassembly, no rupture and no fire within six hours after test.
电芯外壳温度不超过170℃，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 sample 样品状态	No. 编号	The Highest temperature 电池表面最高温度 (℃)	Results 结果
at first cycle, in fully charged states 一次循环后满电状态	A1#	72.7	PASS 合格
	A2#	77.0	PASS 合格
	A3#	73.1	PASS 合格
	A4#	69.4	PASS 合格
	A5#	67.7	PASS 合格
	A6#	75.4	PASS 合格
	A7#	72.1	PASS 合格
	A8#	71.9	PASS 合格
	A9#	72.1	PASS 合格
	A10#	73.0	PASS 合格

Notes 注释:
There is no disassembly, no rupture and no fire within six hours after test.
电芯在测试后 6 小时内未解体、未破裂，未起火。
Ambient temperature 环境温度: 22.9℃

Test T.6: Impact 测试T.6：撞击

Test method 测试方法
Each component cell is to be placed on a flat smooth surface. A 15.8 mm ±0.1 mm 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.
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.
每个元件电芯放在平坦光滑的表面上。一根 316 型不锈钢棒横放在试样中心，钢棒直径 15.8±0.1 毫米，长度至少 6 厘米，或电芯的最长尺度，取二者中较大者。将一块 9.1±0.1 kg 的重锤从 61±2.5 厘米高处跌落到钢棒和试样交叉点，使用一个几乎没有摩擦的、对落体重锤阻力很小的垂直导轨或管道加以控制。垂直导轨或管道用于引导落锤沿与水平支撑表面呈 90 度落下。
接受撞击的试样，纵轴应与测试平面平行并与横放在试样中心的直径 15.8±0.1 毫米弯曲表面的纵轴垂直。每一试样只经受一次撞击。
Requirement 要求
Component cells meet this requirement if their external temperature does not exceed 170℃ and there is no disassembly and no fire within six hours after the test.
原件电池芯外壳温度不超过170℃，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 sample 样品状态	No. 编号	The Highest temperature 电池表面最高温度 (℃)	Results 结果
at first cycle at 50% of the design rated capacity 一次循环后 50%充电状态	A11#	84.0	PASS 合格
	A12#	120.0	PASS 合格
	A13#	123.7	PASS 合格
	A14#	124.2	PASS 合格
	A15#	121.6	PASS 合格

Notes 注释:
There is no disassembly, no rupture and no fire within six hours after test.
电池在测试后 6 小时内未解体、未起火。
Ambient temperature 环境温度: 18.9℃

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

Test method 测试方法
Each 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).
每个电芯在环境温度下与 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.
电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

Discharge current: 强制放电电流： 2600mA	Test voltage: 试验电压： 12Vdc	Total time of discharging: 试验时间： 60Minutes

State of sample 样品状态	No. 编号	Results 结果
at first cycle, in fully discharged states 一次循环完全放电状态	A16#	PASS 合格
	A17#	PASS 合格
	A18	PASS 合格
	A19#	PASS 合格
	A20#	PASS 合格
	A21#	PASS 合格
	A22#	PASS 合格
	A23#	PASS 合格
	A24#	PASS 合格
	A25#	PASS 合格
after fifty cycles ending in fully discharged states 50 个循环完全放电状态	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
	A34#	PASS 合格
	A35#	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测试后 7 天内未解体，未着火。

Ambient temperature 环境温度: 22.9℃

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

Important
注意事项

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3. The test report is invalid without the signatures of Ratifier, Reviewer and Testing engineer.
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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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Tset Report
测试报告

报告编号 Report No	:	AGC02569190401SA01

样品名称 Sample	:	锂离子电池组 Lithium-ion Battery Pack
样品型号 Model	:	18650-2P
委托单位 Applicant	:	深圳市博富能电池有限公司 SHENZHEN BOFUNENG BATTERY CO.,LTD
签发日期 Issue Date	:	2019-04-17

深圳市鑫宇环检测有限公司

Attestation of Global Compliance (Shenzhen) Co., Ltd.

报告专用章

AGC Attestation of Global Compliance

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1、样品描述 Sample Description			
样品名称 Sample Name	锂离子电池组 Lithium-ion Battery Pack	样品型号 Model Name	18650-2P
规格参数 Specifications	18650-2P（标称电压：3.6V,额定容量：5200mAh,充电限制电压：4.2V）		
样品数量 Number of samples	5PCS		
测试实验室 Testing laboratory	深圳市鑫宇环检测有限公司 Attestation of Global Compliance (Shenzhen) Co., Ltd. 深圳市宝安区西乡街道固戍社区茶西三围工业园区第 1.2.3.4 号 2 号一&二楼 2/F., Building 2, No.1-4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Baoan District, Shenzhen, Guangdong, China		
委托单位及地址 Applicant Address	深圳市博富能电池有限公司 SHENZHEN BOFUNENG BATTERY CO.,LTD 深圳市龙岗区龙城街道五联社区朱古石路春洋工业园 A 栋厂房 A Building Plant,Chun Yang Industrial park, Zhu Gu Shi Road,Wu Lian Community,Long Cheng Street,Long Gang District,Shenzhen,China		
生产单位及地址 Manufacturer Address	深圳市博富能电池有限公司 SHENZHEN BOFUNENG BATTERY CO.,LTD 深圳市龙岗区龙城街道五联社区朱古石路春洋工业园 A 栋厂房 A Building Plant,Chun Yang Industrial park, Zhu Gu Shi Road,Wu Lian Community,Long Cheng Street,Long Gang District,Shenzhen,China		
开始日期 Client Date	2019-04-15	完成日期 Completing Date	2019-04-17
结论 Conclusion	合格 Pass 签发日期：2019-04-17		

主检人 Tested by 许正　审核人 Reviewed by 薛佳佳　批准人 Approved by 张志伟

2、测试标准 Standard
<United Nations Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria>《联合国关于危险品运输建议书—试验和标准手册》(ST/SG/AC.10/11/Rev.6)

3、测试项目及结论 Test Item And Conclusion		
测试项目 Item	测试样品编号 Samples Number	结论 Conclusion
过充电Overcharge	B1-B5	通过 Pass

4、测试方法及判定 Test Method And Verdict	测试结果 Result	判定 Verdict
过充电 Overcharge	见表 1 See Table 1	P
充电电流必须是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 18 伏时，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； (b) 制造商建议的充电电压大于 18 伏时，试验的最小电压应为最大充电电压的 1.2 倍。 试验应在环境温度下进行，进行试验的时间应为 24 小时。 The charge current shall be twice the manufacturer's recommended maximum continuous charge current. The minimum voltage of the test shall be as follows: (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. (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. Tests are to be conducted at ambient temperature; the duration of the test shall be 24 hours.	无解体，无起火。 No disassemble and no fire.	P
要求充电电池组在试验过程中和试验后 7 天内无解体，无起火。 Rechargeable batteries meet this requirement if there is no disassemble and no fire during the test and within seven days after the test.		

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表 1 Table 1	过充电 Overcharge			
样品编号 Sample No.	试验电压 Voltage (V)	试验电流 Current(A)	有无解体，起火 Whether disassemble, fire (Y/N)	结论 Conclusion
B1	8.4	8	No disassemble and no fire.	Pass
B2	8.4	8	No disassemble and no fire.	Pass
B3	8.4	8	No disassemble and no fire.	Pass
B4	8.4	8	No disassemble and no fire.	Pass
B5	8.4	8	No disassemble and no fire.	Pass

5、测试设备 Test equipment

AGC-BT-E093	数字万用表 Digital multimeter
AGC-BT-E067	电池测试系统 Battery test system

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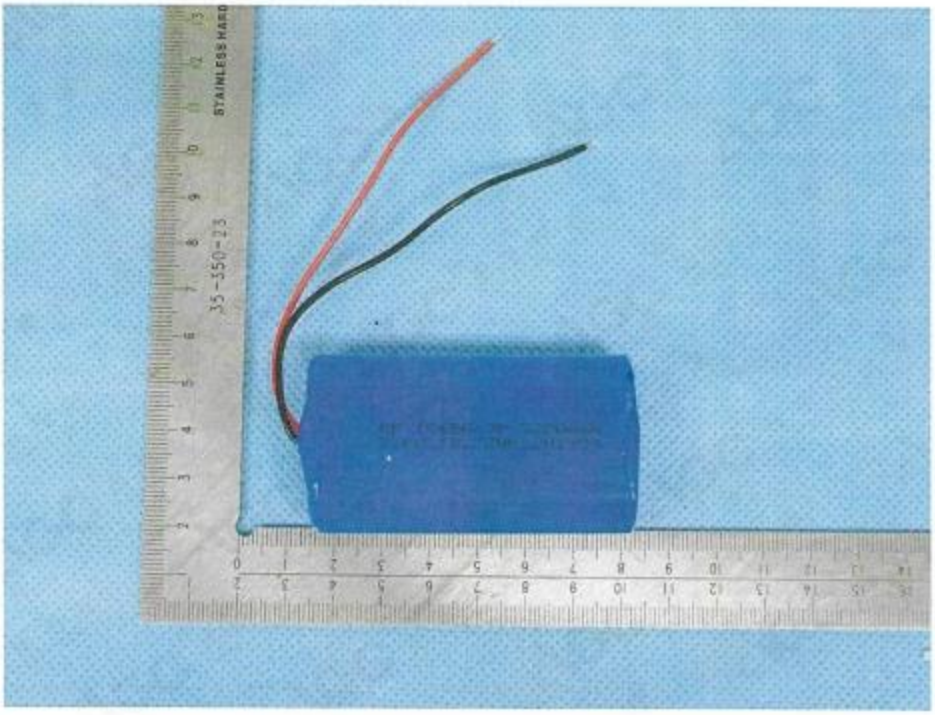
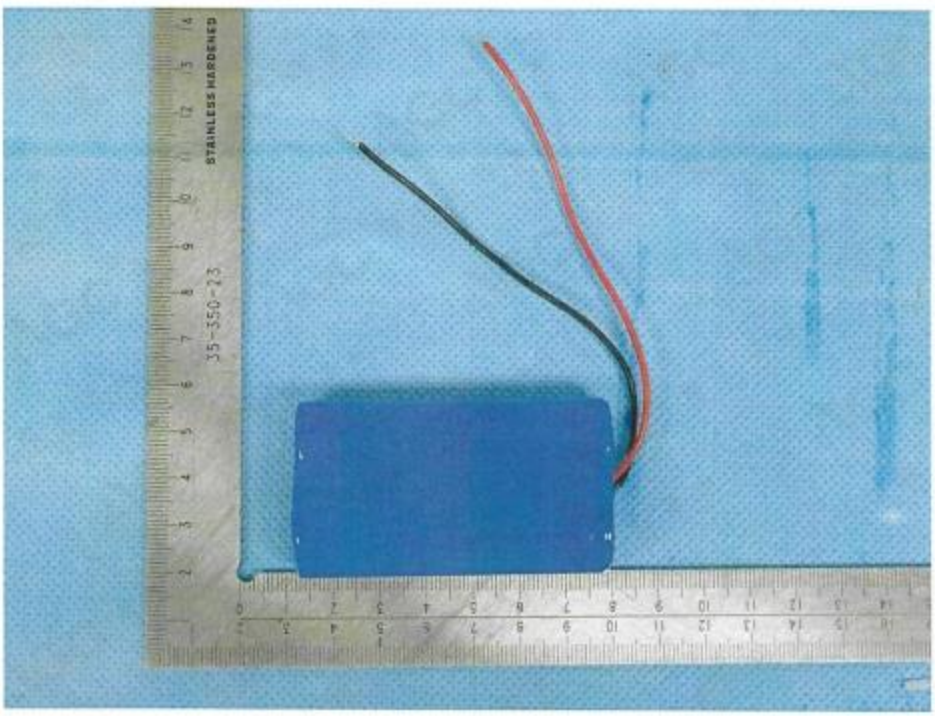
6、样品图片 Sample Photos





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声　明

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End of report

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