APPLICATION FOR SAFETY
On Behalf of

Astera LED Technology GmbH

Rechargeable Li-ion Battery Pack / 可充电锂离子电池组

Model No.: ART7-BAT
型号: ART7-BAT

Prepared for :	**Astera LED Technology GmbH**
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Prepared By :	**Shenzhen Alpha Product Testing Co., Ltd.** **深圳阿尔法商品检验有限公司**
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TEST REPORT
UN38.3, Seventh Edition
Recommendations on transport of dangerous goods, manual of test and criteria, Section 38.3 - Lithium metal and lithium ion Batteries

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Tested by (name + signature)……:	黄永强
Approved by (name + signature)……:	梅刚
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Manufacturer's name :	Astera Manufacturing Ltd 猎光照明科技（深圳）有限公司
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Test specification/测试规范:

Standard : ST/SG/AC.10/11/Rev. 7 Section 38.3

Test procedure : N/A

Non-standard test method……..: N/A

Test item description/样品名称	: Rechargeable Li-ion Battery Pack / 可充电锂离子电池组
Trade Mark/商标	: /

List of Attachments (including a total number of pages in each attachment):
附件清单（含每个附件的总页数）：

- Photos documentation (3 pages)
- 产品图片 (3页)

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(s) 测试项目	Sample Number 样品编号	Conclusion 结论
T.1: Altitude simulation / 高度模拟	B01#~B08#	Pass 合格
T.2: Thermal test / 温度循环		Pass 合格
T.3: Vibration / 振动		Pass 合格
T.4: Shock / 冲击		Pass 合格
T.5: External short circuit /外部短路		Pass 合格
T.6: Impact/Crush/撞击/挤压	C01#~C10#	Pass 合格
T.7: Overcharge / 过充电	B09#~B16#	Pass 合格
T.8: Forced discharge / 强制放电	C11#~C30#	Pass 合格

The sample's status is good.
样品状况良好。

The conditions of the batteries of samples No. B01#~B04#, B09#~B12# are at first cycle, in fully charged states.
样品编号 B01#~B04#, B09#~B12#为第1次循环充放电周期完全充电状态的电池。

The conditions of the batteries of samples No. B05#~B08#, B13#~B16# are after twenty-five cycle ending in fully charged states.
样品编号 B05#~B08#, B13#~B16#为25次循环充放电周期后完全充电状态的电池。

The conditions of the cells of samples No. C01#~C05# are at first cycle at 50% of the design rated capacity.
样品编号 C01#~C05# 为第1次循环充放电周期充电至标称容量的50%状态的电芯。

The conditions of the cells of samples No. C06#~C10# are after twenty-five cycle ending at 50% of the design rated capacity.
样品编号 C06#~C10# 为25次循环充放电周期后充电至标称容量的50%状态的电芯。

The conditions of the cells of samples No. C11#~C20# are at first cycle, in fully discharged states.
样品编号 C11#~C20# 为第1次循环充放电周期完全放电状态的电芯。

The conditions of the cells of samples No. C21#~C30# are after twenty-five cycles ending in fully discharged states.
样品编号C21#~C30# 为25次循环充放电周期后完全放电状态的电芯。

Testing location:
测试地点：

All tests as described in Test Case and Measurement Sections were performed at the laboratory described on page 1.
所有测试项目均在第一页中测试单位实验室中进行。

Test item particulars	
样品信息:	ART7-BAT
Battery type	
Sample shape :	Cuboid battery 长方体电池
Rated of battery :	6700mAh, 3.6V, 24.12Wh
Number of Battery :	2 pcs
Dimension(mm) :	T 20.0mm(max)×W 39.0mm(max)×L 67.0mm(max)
Weight :	96.0g
Test case verdicts **测试判定**	
Test case does not apply to the test object :	N/A
Test item does meet the requirement :	P(Pass)
Test item does not meet the requirement :	F(Fail)
Testing 测试	
Date of receipt of test item :	2024-11-01
Date(s) of performance of test :	2021-01-06 至 2021-02-26

General remarks 备注

This report shall not be reproduced in full without the written approval of the testing laboratory.
本报告未经本实验室书面批准不得全部复制。

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。

"(see remark #)" refers to a remark appended to the report.
"(见注#)" 指报告的备注。

Throughout this report a point is used as the decimal separator.
本报告中以点代替小数点。

Test conclusion:
检验结论：

The Lithium ion Battery is tested according to Section 38.3 of the seventh Revised Edition of the Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria (ST/SG/AC.10/11/Rev. 7, 38.3).
该电池依据联合国《关于危险品货物运输的建议书试验和标准手册》第七版第38.3节进行检测。
Test result: Pass
检验结果: 通过

This report is based on the original report A2012291-C04-R05 issued on March 01, 2021.
Only update the date of issue without any additional tests.
本报告是基于原报告（A2012291-C04-R05），仅更新了报告签发日期，无需额外的测试。

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 Charging Voltage 最大充电电压	Discharge Cut-off Voltage 放电截止电压
ART7-BAT	6700mAh	3.6V	1000mA	500mA	1000mA	500mA	4.2V	3.0V

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 or 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.
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须用全新的电芯或电池进行测试。T.7 可用之前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%

3. In test 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.
在测试T.1至T.4，电池须满足无渗漏，无泄气，无解体，无破裂和无起火，并且每个实验电池在实验后的开路电压不小于其在进行这一实验前电压的90%。

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
38.3.4.1	**Test T.1: Altitude simulation/高度模拟**		**P**
	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、无冒烟、无分解、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、无冒烟、无分解、无破裂以及无着火现象。 The data see table T.1. / 测试数据见表T.1。	P
38.3.4.2	**Test T.2: Thermal test/温度循环**		**P**
	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、无冒烟、无分解、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、无冒烟、无分解、无破裂以及无着火现象。 The data see table T.2. / 测试数据见表T.2。	P
38.3.4.3	**Test T.3: Vibration/振动**		**P**

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
	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 7Hz and 200Hz and back to 7Hz 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。对样品从三个互相垂直的方向上循环12次，共3个小时。其中一个振动方向必须是垂直样品的极性平面。		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
	For cells and small batteries: from 7Hz a peak acceleration of 1gn 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 8gn occurs (approximately 50Hz). A peak acceleration of 8gn is then maintained until the frequency is increased to 200Hz. /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
	For large batteries: from 7Hz to a peak acceleration of 1gn is maintained until 18Hz 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 2gn occurs (approximately 25Hz). A peak acceleration of 2gn is then maintained until the frequency is increased to 200Hz. /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。		N/A

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、无冒烟、无分解、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、无冒烟、无分解、无破裂以及无着火现象。 The data see table T.3. / 测试数据见表T.3。	P
38.3.4.4	**Test T.4: Shock/冲击**		**P**
	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. Each cell or battery shall be subjected to a half-sine shock of peak acceleration of 150gn and pulse duration of 6 milliseconds. Each cell or battery shall be subjected to three shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicular mounting positions of the cell or battery for a total of 18 shocks. /以稳固的托架固定住每个样品。对每个样品以峰值为150gn的半正弦的加速度撞击，脉冲持续6ms。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
	However, large cells and large batteries shall be subjected to a half-sine shock of peak acceleration of 50gn and pulse duration of 11 milliseconds. Each cell or battery is subjected to three shocks in the positive direction followed by three shocks in the negative direction of each of three mutually perpendicular mounting positions of the cell for a total of 18 shocks. /大电芯和大电池须经受最大加速度50gn和脉冲持续时间11ms的半正弦波冲击。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。		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、无冒烟、无分解、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、无冒烟、无分解、无破裂以及无着火现象。 The data see table T.4. / 测试数据见表T.4。	P

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
38.3.4.5	**Test T.5: External short circuit/外部短路**		**P**
	The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches 57±4°C and then the cell or battery shall be subjected to a short circuit condition with a total external resistance of less than 0.1 ohm at 57±4°C. 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. /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，然后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。		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，并且无分解、无破裂和无着火现象发生。	No disassembly, no rupture and no fire. / 无分解、无破裂以及无着火现象发生。 The data see table T.5. / 测试数据见表T.5。	P
38.3.4.6	**Test T.6: Impact/Crush/撞击/挤压**		**P**
	Test procedure – Impact (applicable to cylindrical cells not less than 18mm in diameter) /撞击(适合于直径不小于18mm的圆柱形电芯)	Cylindrical cell / 圆柱形电芯	P
	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，使用一个几乎没有摩擦的、对落体重物阻力最小的垂直轨道或管道加以控制，垂直轨道或管道用于引导重物沿与水平支撑表面呈90度落下。		P

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
	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 18mm in diameter). /挤压 (适用于棱柱形、袋状、硬币/纽扣电芯和直径不超过18mm的圆柱形电芯)	Cylindrical cell / 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. /电池变形达到原始厚度的50%以上。		N/A
	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。		N/A
	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。		N/A
	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，并且无分解和无着火现象发生。	No disassembly, no rupture and no fire. / 无分解、无破裂以及无着火现象发生。 The data see table T.6. / 测试数据见表T.6。	P

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
38.3.4.7	**Test T.7: Overcharge/过充电**		**P**
	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。	The voltage of the test is 8.4V, and the current is 2.0A. / 测试电压为8.4V，电流为2.0A.	P
	(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。		N/A
	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，样品无分解和无着火现象。	No disassembly and no fire. / 无分解和无着火现象发生。 The data see table T.7. / 测试数据见表T.7。	P
38.3.4.8	**Test T.8: Forced discharge/强制放电**		**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，将单个电芯串接在12V的直流电源上进行强制放电，此直流电源供给每个电芯的初始电流为制造商宣称的最大放电电流。 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
	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，样品无分解和无着火现象发生。	No disassembly and no fire. / 无分解和无着火现象发生。 The data see table T.8. / 测试数据见表T.8。	P

Tables

Table T.1: Altitude simulation 高度模拟

The state of cells 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(%)	Status 结果
		Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
Full charged after one cycle 1 次循环后满电状态	B01#	95.826	4.188	95.825	4.187	0.001	99.976	Pass 合格
	B02#	95.828	4.187	95.828	4.185	0.000	99.952	Pass 合格
	B03#	95.675	4.186	95.675	4.186	0.000	100.000	Pass 合格
	B04#	95.663	4.187	95.663	4.185	0.000	99.952	Pass 合格
	-	-	-	-	-	-	-	-
Full charged after twenty-five cycles 25 次循环后满电状态	B05#	95.778	4.185	95.778	4.183	0.000	99.952	Pass 合格
	B06#	95.668	4.183	95.668	4.182	0.000	99.976	Pass 合格
	B07#	95.886	4.185	95.885	4.184	0.001	99.976	Pass 合格
	B08#	95.812	4.186	95.812	4.186	0.000	100.000	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。

Table T.2: Thermal test 温度试验

The state of cells 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(%)	Status 结果
		Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
Full charged after one cycle 1 次循环后满电状态	B01#	95.825	4.187	95.819	4.137	0.006	98.806	Pass 合格
	B02#	95.828	4.185	95.823	4.133	0.005	98.757	Pass 合格
	B03#	95.675	4.186	95.667	4.140	0.008	98.901	Pass 合格
	B04#	95.663	4.185	95.657	4.133	0.006	98.757	Pass 合格
	-	-	-	-	-	-	-	-
Full charged after twenty-five cycles 25 次循环后满电状态	B05#	95.778	4.183	95.772	4.128	0.006	98.685	Pass 合格
	B06#	95.668	4.182	95.662	4.129	0.006	98.733	Pass 合格
	B07#	95.885	4.184	95.878	4.132	0.007	98.757	Pass 合格
	B08#	95.812	4.186	95.806	4.130	0.006	98.662	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。

Tables

Table T.3: Vibration 振动

The state of cells 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(%)	Status 结果
		Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
Full charged after one cycle 1 次循环后满电状态	B01#	95.819	4.137	95.810	4.119	0.009	99.565	Pass 合格
	B02#	95.823	4.133	95.817	4.117	0.006	99.613	Pass 合格
	B03#	95.667	4.140	95.658	4.118	0.009	99.469	Pass 合格
	B04#	95.657	4.133	95.649	4.117	0.008	99.613	Pass 合格
	-	-	-	-	-	-	-	-
Full charged after twenty-five cycles 25 次循环后满电状态	B05#	95.772	4.128	95.764	4.105	0.008	99.443	Pass 合格
	B06#	95.662	4.129	95.654	4.111	0.008	99.564	Pass 合格
	B07#	95.878	4.132	95.871	4.112	0.007	99.516	Pass 合格
	B08#	95.806	4.130	95.799	4.110	0.007	99.516	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。

Table T.4: Shock 冲击

The state of cells 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(%)	Status 结果
		Mass 质量 (g)	Voltage 电压 (V)	Mass 质量 (g)	Voltage 电压 (V)			
Full charged after one cycle 1 次循环后满电状态	B01#	95.810	4.119	95.809	4.117	0.001	99.951	Pass 合格
	B02#	95.817	4.117	95.816	4.116	0.001	99.976	Pass 合格
	B03#	95.658	4.118	95.656	4.117	0.002	99.976	Pass 合格
	B04#	95.649	4.117	95.648	4.116	0.001	99.976	Pass 合格
	-	-	-	-	-	-	-	-
Full charged after twenty-five cycles 25 次循环后满电状态	B05#	95.764	4.105	95.763	4.102	0.001	99.927	Pass 合格
	B06#	95.654	4.111	95.653	4.109	0.001	99.951	Pass 合格
	B07#	95.871	4.112	95.868	4.110	0.003	99.951	Pass 合格
	B08#	95.799	4.110	95.797	4.107	0.002	99.927	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。

Tables

Table T.5: External short circuit 外部短路			
The state of cells 样品状态	No. 编号	External Peak temperature(℃) 电池表面最高温度(℃)	Status 结果
Full charged after one cycle 1 次循环后满电状态	B01#	58.7	Pass 合格
	B02#	59.4	Pass 合格
	B03#	59.7	Pass 合格
	B04#	58.8	Pass 合格
	-	-	-
Full charged after twenty-five cycles 25 次循环后满电状态	B05#	59.1	Pass 合格
	B06#	59.4	Pass 合格
	B07#	58.0	Pass 合格
	B08#	59.3	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。			

Table T.6: Impact or Crush/ 撞击或挤压			
The state of cells 样品状态	No. 编号	External Peak temperature(℃) 电池表面最高温度(℃)	Status 结果
50% charged after one cycle 1 次循环后 50%充电状态	C01#	23.6	Pass 合格
	C02#	23.5	Pass 合格
	C03#	23.6	Pass 合格
	C04#	23.6	Pass 合格
	C05#	23.6	Pass 合格
50% after twenty-five cycles 25 次循环后 50%充电状态	C06#	23.6	Pass 合格
	C07#	23.6	Pass 合格
	C08#	23.6	Pass 合格
	C09#	23.5	Pass 合格
	C10#	23.5	Pass 合格
Notes 注释: There is no disassembly, no rupture and no fire during the test and within six hours after test. 电芯在测试中和测试后 6 小时内未解体、未破裂，未起火。			

Tables

Table T.7: Overcharge 过充电		
The state of cells 样品状态	No. 编号	Status 结果
Full charged after one cycle 1 次循环后满电状态	B09#	Pass 合格
	B10#	Pass 合格
	B11#	Pass 合格
	B12#	Pass 合格
Full charged after twenty-five cycles 25 次循环后满电状态	B13#	Pass 合格
	B14#	Pass 合格
	B15#	Pass 合格
	B16#	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，未起火。		

Table T.8: Forced discharge 强制放电		
The state of cells 样品状态	No. 编号	Status 结果
Full discharged after one cycle 1 次循环完全放电状态	C11#	Pass 合格
	C12#	Pass 合格
	C13#	Pass 合格
	C14#	Pass 合格
	C15#	Pass 合格
	C16#	Pass 合格
	C17#	Pass 合格
	C18#	Pass 合格
	C19#	Pass 合格
	C20#	Pass 合格
Full discharged after twenty-five cycles 25 次循环完全放电状态	C21#	Pass 合格
	C22#	Pass 合格
	C23#	Pass 合格
	C24#	Pass 合格
	C25#	Pass 合格
	C26#	Pass 合格
	C27#	Pass 合格
	C28#	Pass 合格
	C29#	Pass 合格
	C30#	Pass 合格
Notes 注释: There is no disassembly and no fire during the test and within seven days after the test. 电芯在测试中和测试后 7 天内未解体，未起火。		

Appendix 1
Photo documentation

Photo 1

Battery View:

[√] front

[ ] rear

[ ] right side

[ ] left side

[ ] top

[ ] bottom

[ ] internal

Photo 2

Battery View:

[√] front

[ ] rear

[ ] right side

[ ] left side

[ ] top

[ ] bottom

[ ] internal

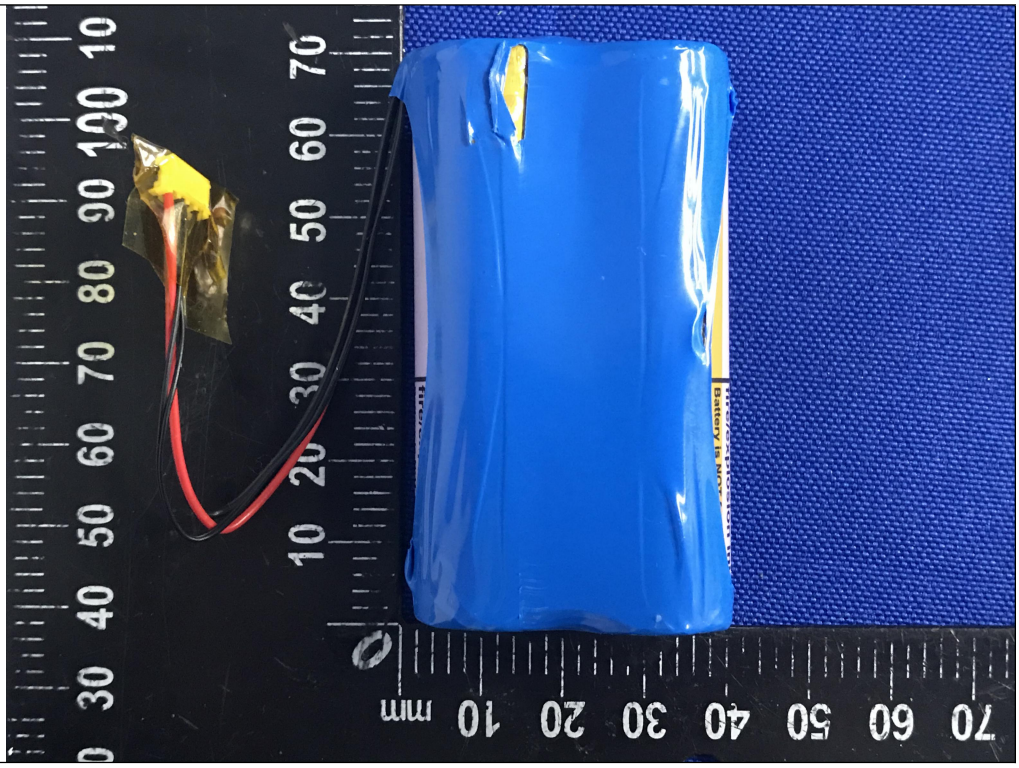


Photo documentation

Photo 3

Battery View:

[ ] front

[ ] rear

[ ] right side

[ ] left side

[ ] top

[ ] bottom

[√] internal

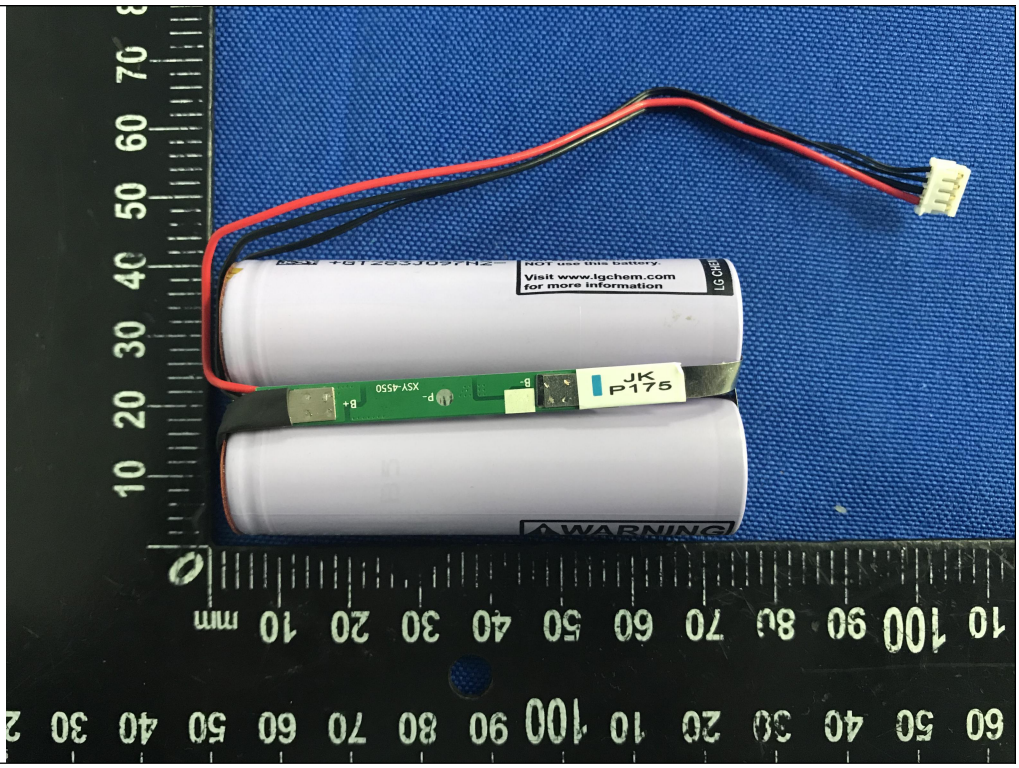


Photo 4

Cell View:

[√] front

[ ] rear

[ ] right side

[ ] left side

[ ] top

[ ] bottom

[ ] internal

Photo documentation

Photo 5

PCB View:

[√] front

[ ] rear

[ ] right side

[ ] left side

[ ] top

[ ] bottom

[ ] internal

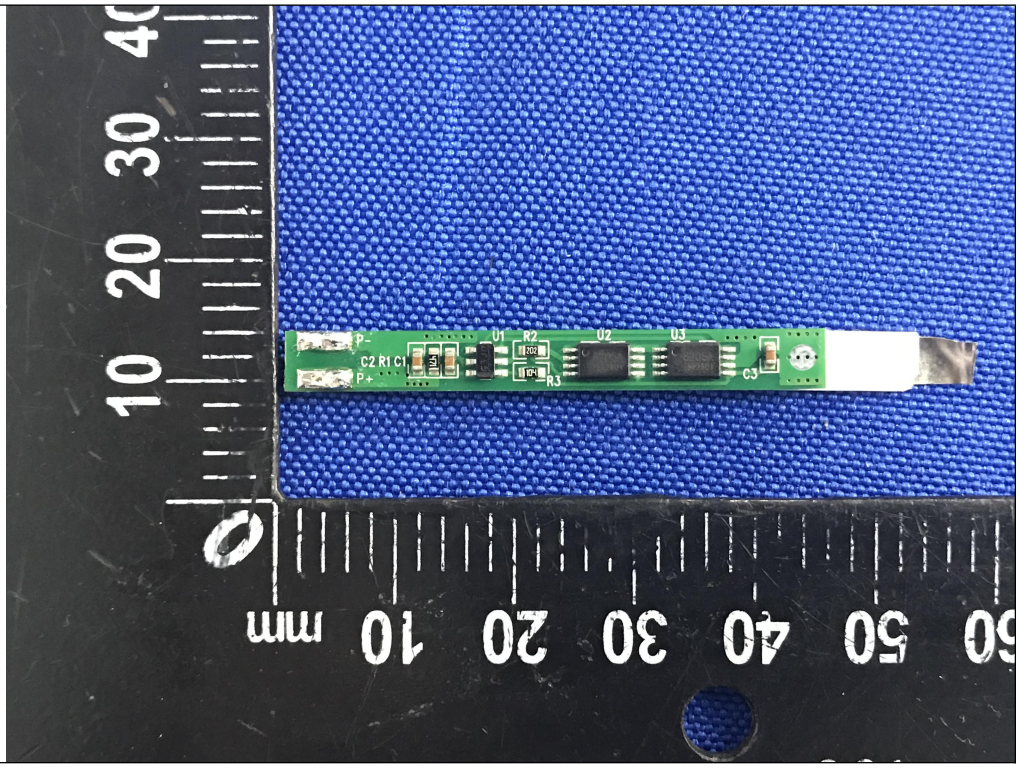


Photo 6

PCB View:

[ ] front

[√] rear

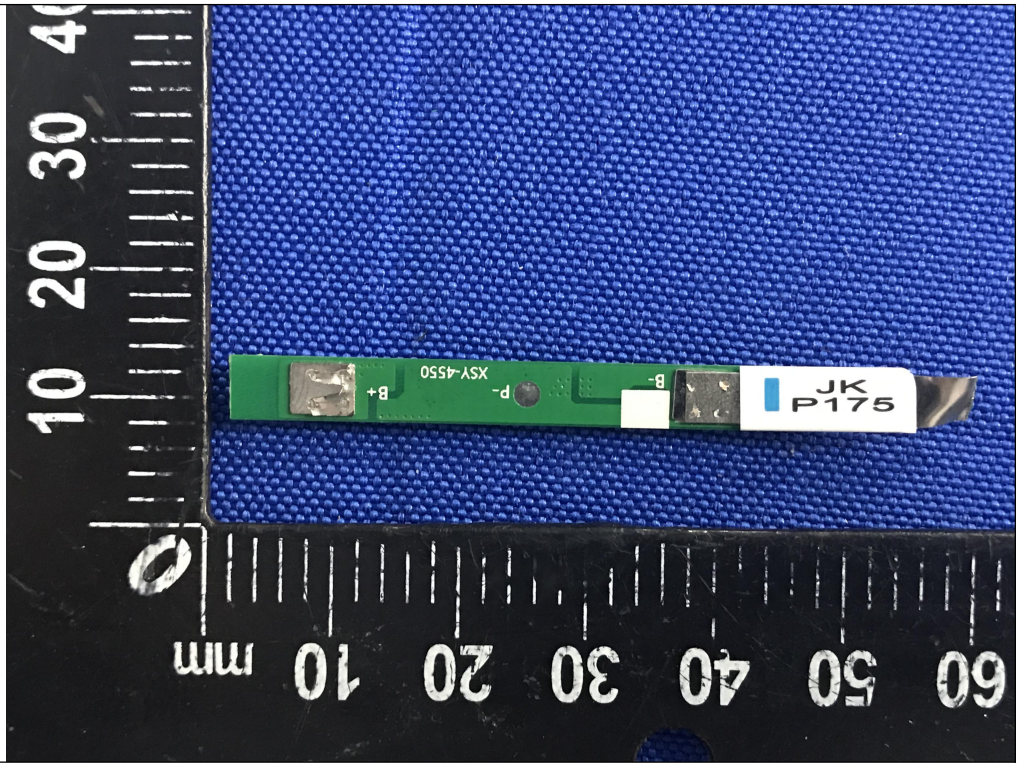
[ ] right side

[ ] left side

[ ] top

[ ] bottom

[ ] internal



---End of report---