锂电池 UN38.3 测试报告
Lithium Battery UN38.3 Test Report

报 告 编 号 Report No.	：	AGC00484220206UA01

产 品 名 称 PRODUCT DESIGNATION	:	锂离子聚合物电池 Li-ion Polymer Battery
商 标 BRAND NAME	:	N/A
样 品 型 号 MODEL NAME	:	PL596060P
委 托 单 位 APPLICANT	:	深圳市京华信息技术有限公司 Shenzhen Jingwah Information Technology Co., Ltd.
签 发 日 期 DATE OF ISSUE	:	2022-04-13
检 测 标 准 STANDARD(S)	:	联合国《试验和标准手册》（第 7 版）38.3 节 UN "Manual of Tests and Criteria" ST/SG/AC.10/11/Rev.7/Subsection 38.3
报 告 版 本 REPORT VERSION	:	V1.0

深圳市鑫宇环检测有限公司

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

1. 样品描述 Sample Description			
样品名称 Sample Name	锂离子聚合物电池 Li-ion Polymer Battery	样品型号 Model Name	PL596060P
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.		
测试地址 Testing Address	深圳市宝安区福海街道和平社区重庆路骏丰工业园厂房 19 栋第一、二层 1, 2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China.		
委托单位 Applicant	深圳市京华信息技术有限公司 Shenzhen Jingwah Information Technology Co., Ltd.		
委托单位地址 Applicant Address	深圳市福田区华强北街道福强社区振中路 168 号京华 4 栋 6 楼 6F, Bldg.4, Jinghua Square, No. 168, Zhenzhong Rd., Fuqiang Community, Huaqiangbei, Futian District, Shenzhen, Guangdong, China		
生产单位 Manufacturer	深圳世纪新能源电池有限公司 Shenzhen Century New Energy Battery Co., Ltd.		
生产单位地址 Manufacturer Address	深圳市宝安区石岩镇第五工业区 Fifth Industrial Zone, Shiyan Town, Baoan District, Shenzhen, Guangdong, China		
电芯生产单位 Manufacturer Of Cell	深圳世纪新能源电池有限公司 Shenzhen Century New Energy Battery Co., Ltd.		
用途 Use	---		
电池类型 Battery Type	可充电锂电池组 Rechargeable Li Battery	组成方式 Composing Mode	2S1P
标称电压 Nominal Voltage	7.4V	额定容量 Rated Capacity	2800mAh
瓦时 Watt-hour	20.72Wh	形状 Form	近长方体 Almost Cuboid
充电上限电压 Limited Charge Voltage	8.4V	截止电压 Cut-off Voltage	6.0V
充电电流 Charge Current	560mA	最大持续充电电流 Max. Continuous Charge Current	1400mA
最大持续放电电流 Max. Continuous Discharge Current	1400mA	充电截止电流 End Charge Current	56mA
电芯型号 Cell Model	PL596060	电芯容量 Cell Rated Capacity	2800mAh
开始时间 Client Date	2022-03-25	完成时间 Completing Date	2022-04-13

2、测试标准 Standard		
联合国《试验和标准手册》（第 7 版）38.3 节 UN "Manual of Tests and Criteria" ST/SG/AC.10/11/Rev.7/Subsection 38.3		
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
高度模拟 Altitude simulation	Z1~Z4 X1~X4	通过 Pass
温度试验 Thermal test		通过 Pass
振动 Vibration		通过 Pass
冲击 Shock		通过 Pass
外部短路 External Short Circuit		通过 Pass
挤压 Crush	Z5~Z9 X5~X9	通过 Pass
过度充电Overcharge	Z10-Z13 X10-X13	通过 Pass
强制放电 Forced discharge	Z14-Z23 X14-X23	通过 Pass
送检样品符合《联合国试验和标准手册》(ST/SG/AC.10/11/Rev.7), 38.3 章的要求。 The submitted samples were complied with <United Nations Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria>(Seventh revised edition), sub-section 38.3.		

报告修订记录 Report Revise Record：				
版本号 Report Version	修改次数 Revise Time	签发日期 Issued Date	有效性 Valid Version	备注 Notes
V1.0	/	2022-04-13	有效 Valid	首次发行 Initial release

主检人 Tested by		审核人 Reviewed by		批准人 Approved by	

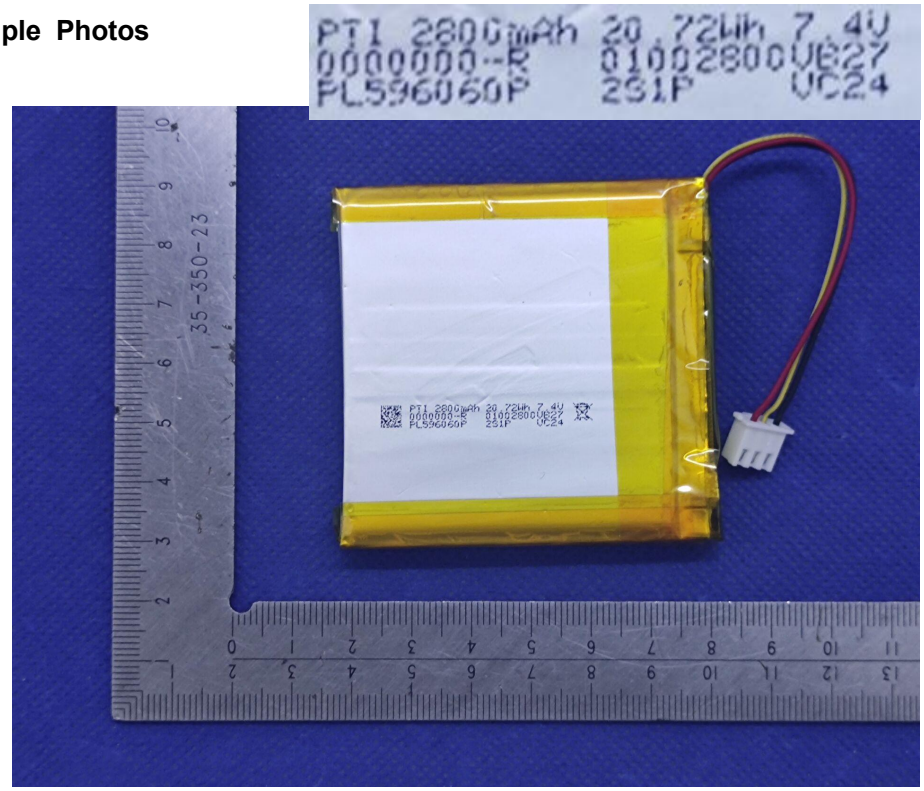
样品描述及说明 Description of the sample

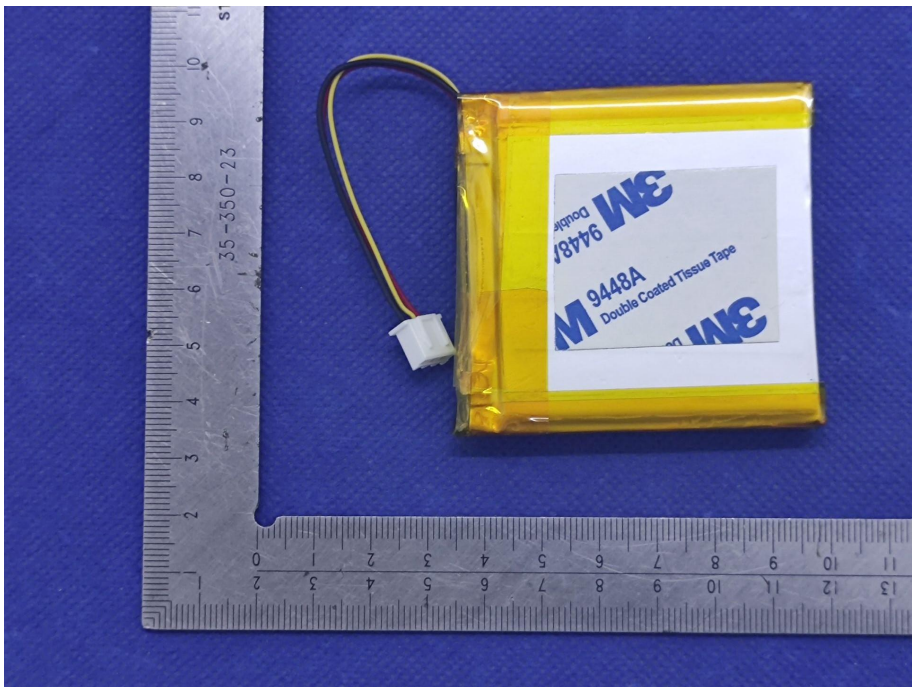
Z1~Z4, Z10-Z13	第1个交替充电放电周期完全充电状态的电池； Batteries at first cycle in fully charged states;
X1-X4, X10-X13	第25个交替充电放电周期结束后完全充电状态的电池; Batteriesl after 25 cycles ending in fully charged states;
Z5~Z9	第1个交替充电放电周期完全充电状态电芯容量设计值50%的电芯； Cells at first cycle at 50% of the design rated capacity;
X5~X9	第25个交替充电放电周期完全充电状态电芯容量设计值50%的电芯； The 25th cycle of charging and discharging 50% of the battery cell in rated capacity state;
Z14-Z23	第一个充放电周期完全放电状态的电芯； Cells at first cycle in fully discharged states;
X14~X23	第25个交替充电放电周期结束后完全放电状态的电电芯； Cells after 25 cycles ending in fully discharge states.

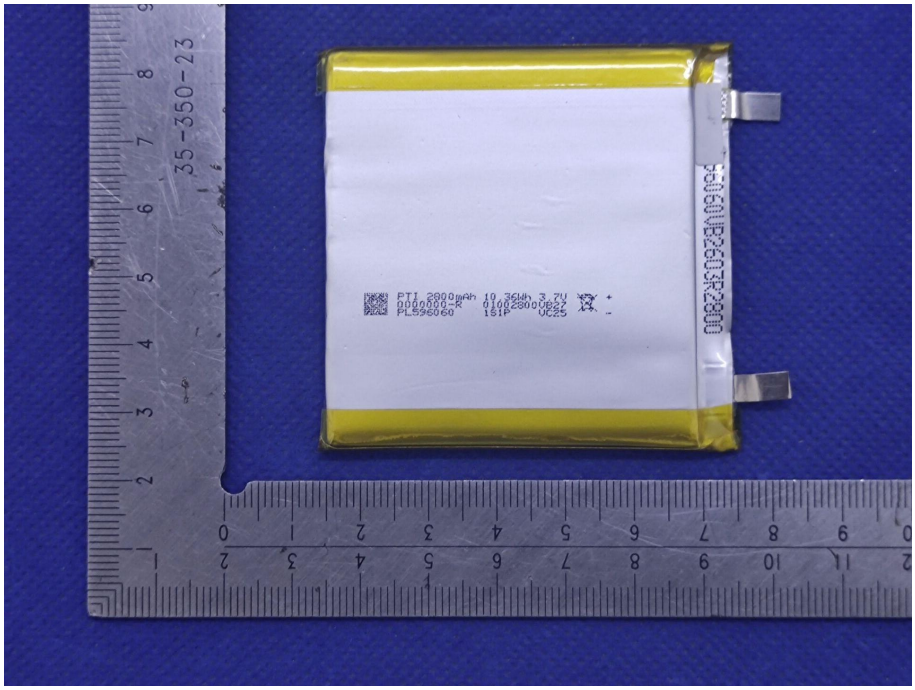
可能的试验情况判定 Test case verdicts：

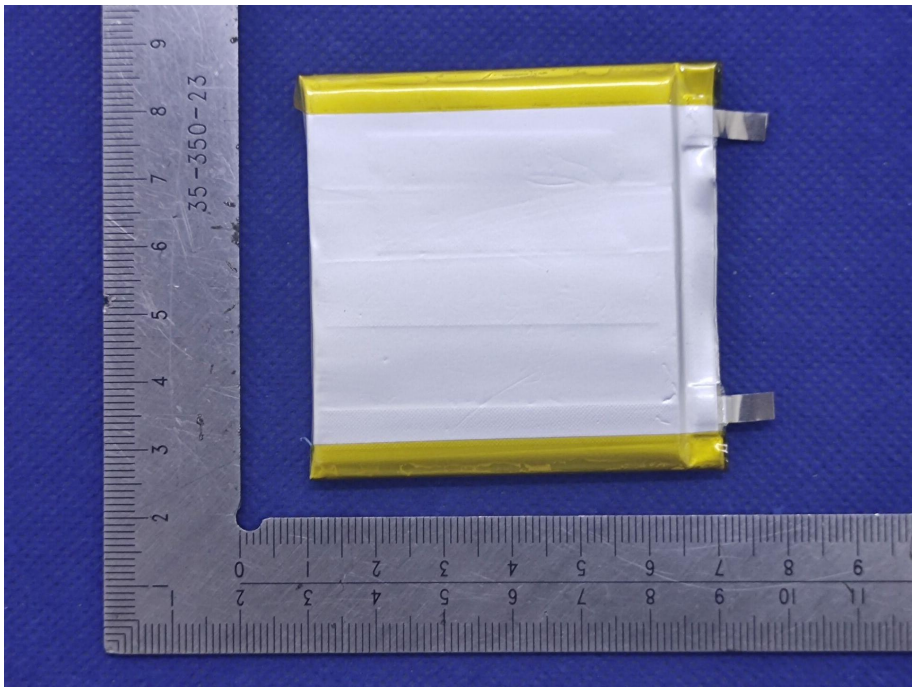
－要求不适用本产品 Test case does not apply to the test object	N/A(Not applicable)
－试验结果符合要求 Test item does meet the requirement	P(ass)
－试验结果不符合要求 Test item does not meet the requirement	F(ail)

4、样品图片 Sample Photos









仅对原报告照片中的样品负责

Authenticate the photo on original report only

5、测试方法及判定 Test Method And Verdict

章节 Clause	标准要求 Requirements	测试结果 Result	判定 Verdict
38.3.4.1	**测试 1：高度模拟** **Test 1: Altitude simulation**	见表 1 See Table 1	P
	试验电池和电池组应压力不大于11.6kpa和环境温度为20±5℃的条件下贮存不少于6个小时。 Test cells and batteries shall be stored at a pressure of 11.6kPa or less for at least six hour at ambient temperature (20±5℃)	无渗漏，无排气，无解体，无破裂和无起火。 No leakage, no venting, no disassemble, no rupture and no fire.	P
	要求电池和电池组无渗漏、无排气、无解体、无破裂和无起火，并且每个试验电池或电池组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%。有关电压的要求不适用于完全放电状态的试验电池和电池组。 Cells and batteries meet this requirement if there is no leakage, no venting, no disassemble, 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.		
38.3.4.2	**测试 2：温度试验** **Test 2: Thermal test**	见表 2 See Table 2	P
	试验电池和电池组先在试验温度等于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，接着将所有试验电池和电池组在环境温度（20℃±5℃）下存放24小时。对于大型电池和电池组，暴露于极端试验温度的时间至少应为12小时。 Test cells and batteries 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 until 10 total cycles are complete, after which all test cells and batteries are to be stored for 24 hours at ambient temperature (20 ± 5℃). For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12 hours.	无渗漏，无排气，无解体，无破裂和无起火。 No leakage, no venting, no disassemble, no rupture and no fire.	P
	要求电池和电池组无渗漏、无排气、无解体、无破裂和无起火，并且每个试验电池或电池组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%。有关电压的要求不适用于完全放电状态的试验电池和电池组。 Cells and batteries meet this requirement if there is no leakage, no venting, no disassemble, 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.		

章节 Clause	标准要求 Requirements	测试结果 Result	判定 Verdict
38.3.4.3	**测试3：振动** **Test 3: Vibration**	见表 3 See Table 3	P
	电池和电池组紧固于振动机平台，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 赫兹和 200 赫兹之间，再回到 7 赫兹，跨度为 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。 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 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. 作对数式频率扫描，对总质量不足 12 千克的电池和电池组（电池和小型电池组），和对 12 千克及更大的电池组（大型电池组）有所不同。 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). 对电池和小型电池组：从 7 赫兹开始，保持 1g_n 的最大加速度，直到频率达到 18 赫兹。然后将振幅保持在 0.8 毫米（总偏移 1.6 毫米），并增加频率直到最大加速度达到 8g_n（频率约为 50 赫兹）。将最大加速度保持在 8g_n 直到频率增加到 200 赫兹。 For cells and small batteries: from 7 Hz a peak acceleration of 1g_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 8g_n occurs (approximately 50 Hz). A peak acceleration of 8g_n is then maintained until the frequency is increased to 200 Hz. 对大型电池组：从 7 赫兹开始，保持 1gn 的最大加速度，直到频率达到 18 赫兹。然后将振幅保持在 0.8 毫米（总偏移 1.6 毫米），并增加频率直到最大加速度达到 2g_n（频率约为 25 赫兹）。将最大加速度保持在 2g_n 直到频率增加到 200 赫兹。 For large batteries: from 7 Hz to a peak acceleration of 1g_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 2gn occurs (approximately 25 Hz). A peak acceleration of 2g_n is then maintained until the frequency is increased to 200 Hz. 要求电池和电池组试验中和试验后无渗漏、无排气、无解体、无破裂和无起火，并且每个试验电池或电池组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	无渗漏，无排气，无解体，无破裂和无起火。 No leakage, no venting, no disassemble, no rupture and no fire.	P

<table>
<tr><th>章节
Clause</th><th>标准要求
Requirements</th><th>测试结果
Result</th><th>判定
Verdict</th></tr>
<tr><td></td><td>90%。有关电压的要求不适用于完全放电状态的试验电池和电池组。
Cells and batteries meet this requirement if there is no leakage, no venting, no disassemble, 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.</td><td></td><td></td></tr>
<tr><td>38.3.4.4</td><td>测试4：冲击
Test 4: Shock</td><td>见表 4
See Table 4</td><td>P</td></tr>
<tr><td></td><td>试验电池和电池组用坚硬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。
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.
每个电池需经受最大加速度150g_n和脉冲持续时间6毫秒的半正弦波冲击。针对大型电池需经受最大加速度50g_n和脉冲持续时间11毫秒的半正弦波冲击。
Each cell shall be subjected to a half-sine shock of peak acceleration of 150g_n and pulse duration of 6 milliseconds. Alternatively, large cells may be subjected to a half-sine shock of peak acceleration of 50g_n and pulse duration of 11 milliseconds.
每个电池组应根据电池组的质量而受到峰值加速度的半正弦波冲击。对于小型电池组的脉冲持续时间应6毫秒，对于大型电池组的脉冲持续时间应为11毫秒，下面的公式用于计算适当的最小峰值加速度。
<table>
<tr><th>电池
Battery</th><th>最小峰值加速度
Minimum peak acceleration</th><th>脉冲持续时间
Pulse duration</th></tr>
<tr><td>小型电池
Small batteries</td><td>150g_n 或公式结果中的较小值
150g_n or result of formula
$\text{Acceleration } (g_n) = \sqrt{\left(\frac{100850}{\text{mass}^*}\right)}$
whichever is smaller</td><td>6毫秒
6ms</td></tr>
<tr><td>大型电池
Large batteries</td><td>50g_n 或公式结果中的较小值
50g_n or result of formula
$\text{Acceleration } (g_n) = \sqrt{\left(\frac{3000}{\text{mass}^*}\right)}$
whichever is smaller</td><td>11毫秒
11ms</td></tr>
<tr><td colspan="3">* 质量单位用千克计算 Mass is expressed in kilograms.</td></tr>
</table>
Each battery shall be subjected to a half-sine shock of peak acceleration depending on the mass of the battery. The pulse duration shall be 6 milliseconds for small batteries and 11 milliseconds for large batteries. The formulas below are provided to</td><td>无渗漏，无排气，无解体，无破裂和无起火。
No leakage, no venting, no disassemble, no rupture and no fire.</td><td>P</td></tr>
</table>

章节 Clause	标准要求 Requirements	测试结果 Result	判定 Verdict
	calculate the appropriate minimum peak accelerations. 每个电池或电池组需在三个互相垂直的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。 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. 要求电池和电池组无渗漏、无排气、无解体、无破裂和无起火，并且每个试验电池或电池组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%。有关电压的要求不适用于完全放电状态的试验电池和电池组。 Cells and batteries meet this requirement if there is no leakage, no venting, no disassemble, 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.		
38.3.4.5	**测试 5：外部短路** **Test 5: External Short Circuit**	见表 5 See Table 5	P
	待测试的电池或电池组应加热一段时间，以使其外表面温度达到均匀稳定的 57±4℃的温度。加热时间取决于电池或电池组的大小和设计，并应进行评估和记录。如果这种评估是不可行的，对于小型电池和小型电池组至少在 57±4℃的环境下存放 6 小时，对于大型电池和大型电池组至少在 57±4℃的环境下存放 12 小时。然后电池或电池组在 57±4℃的环境中，应接受一个外部总阻值小于 0.1 欧姆的短路条件。 The cell or battery to be tested shall be shall be heated for a period of time necessary to reach a homogeneous stabilized temperature of 57±4℃, measured on the external case. This period of time depends on the size and design of the cell or battery and should be assessed and documented. If this assessment is not feasible, the exposure time shall be at least 6 hours for small cells and small batteries, and 12 hours for large cells and large batteries. Then the cell or battery at 57±4℃ shall be subjected to one short circuit condition with a total external resistance of less than 0.1 ohm. 这一短路条件应在电池或电池组的外壳温度回到 57±4℃后继续短路 1 小时，或对于大型电池组其外壳温度已下降了一半的最大升温，并保持低于该值。短路和冷却过程至少在环境温度中进行。 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, or in the case of the large batteries, has decreased by half of the maximum temperature increase observed during the test and remains below that value.The short circuit and cooling down phases shall be conducted at least at ambient temperature.	无解体，无破裂，无起火。 No disassemble , no rupture and no fire.	P

章节 Clause	标准要求 Requirements	测试结果 Result	判定 Verdict
	要求电池和电池组外壳温度不超过 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。 Cells and batteries meet this requirement if their external temperature does not exceed 170℃ and there is no disassemble, no rupture and no fire within six hours of this test.		
38.3.4.6	**测试 6：撞击/挤压** **Test 6: Impact / Crush**	见表 6 See Table 6	P
	撞击（适用于直径大于等于 18 毫米的圆柱形电池） Impact (applicable to cylindrical cells not less than 18mm in diameter) 试样电池或元件电池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 毫米±0.1 毫米，长度至少 6 厘米，或电池最长端的尺度，取二者之长者。将一块 9.1 千克±0.1 千克的重锤从 61±2.5 厘米高处跌落到钢棒和试样交叉处，使用一个几乎没有摩擦的、对落体重锤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落锤沿与水平支撑表面呈 90 度落下。 The test sample cell or component cell is to be placed on a flat smooth surface. A 15.8mm±0.1mm diameter, at least 6cm 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 ± 0.1kg 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 friction less, 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. 接受撞击的试样，纵轴应与平坦表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。 The test samples is to be impacted with its longitudinal axis parallel to the flat surface and perpendicular to the longitudinal axis of the 15.8mm±0.1mm diameter curved surface lying across the centre of the test samples. Each sample is to be subjected to only a single impact. 要求电池和电池组外壳温度不超过 170℃，并且在试验过程中及试验后 6 小时内无解体，无起火。 Cells and component cells meet this requirement if their external temperature does not exceed 170℃ and there is no disassemble and no fire during the test and within six hours after this test.	N/A	N/A
	挤压（适用于棱柱形、袋装、硬币/纽扣电池和直径小于 18 毫米的圆柱形电池） Crush (applicable to prismatic, pouch, coin/button cells and cylindrical cells less than 18mm in diameter) 将电池或元件电池放在两个平面之间挤压，挤压力度逐渐加大，	无解体，无破裂，无起火。 No disassemble , no rupture and no fire.	P

章节 Clause	标准要求 Requirements	测试结果 Result	判定 Verdict
	在第一个接触点上的速度大约为1.5厘米/秒。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13千牛±0.78千牛； (b) 电池的电压下降至少100毫伏；或 (c) 电池变形达原始厚度的50%或以上。 A cell or component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5cm/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 13kN±0.78kN; (b) The voltage of the cell drops by at least 100mV; or (c) The cell is deformed by 50% or more of its original thickness. 一旦达到最大压力、电压下降 100 毫伏或更多，或电池变形至少达原厚度的 50%，即可解除压力。 Once the maximum pressure has been obtained, the voltage drops by 100mV or more, or the cell is deformed by at least 50% of its original thickness, the pressure shall be released. 棱柱形或袋装电池应从最宽的一面施压。纽扣/硬币形电池应从其平坦表面施压。圆柱形电池应从与纵轴垂直的方向施压。 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. 每个试样电池或元件电池只做一次挤压试验。试样应继续观察 6 小时。试验应使用之前未做过其他试验的电池或元件电池进行。 Each test cell or component cell is to be subjected to one crush only. The test Samples 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. 要求电池和电池组外壳温度不超过170℃，并且在试验过程中及试验后6小时内无解体，无起火。 Cells and component cells meet this requirement if their external temperature does not exceed 170℃ and there is no disassemble and no fire during the test and within six hours after this test.		
38.3.4.7	**测试 7：过充电** **Test 7: Overcharge**	见表 7 See Table 7	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。	无分解，无起火。No disassemble and no fire.	P

章节 Clause	标准要求 Requirements	测试结果 Result	判定 Verdict
	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.		
	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.		
38.3.4.8	**测试 8：强制放电** **Test 8: Forced discharge**	见表 8 See Table 8	P
	每个电池应在环境温度下与 12V 直流电源上进行强制放电，此直流电源串联在起始电流等于制造商给定的最大放电电流条件下强制放电。 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. 将适当大小和额定值的电阻负荷与试验电池串联，计算得出给定的放电电流。对每个电池进行强制放电，放电时间（小时）应等于其额定容量除以初始试验电流（安培）。 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).	无分解，无起火。 No disassemble and no fire.	P
	要求原电池或充电电池在试验过程中和试验后 7 天内无解体，无起火。 Primary or rechargeable cells meet this requirement if there is no disassemble and no fire during the test and within seven days after the test.		

6、测试数据 Test Data

表 1 Table 1	高度模拟 Altitude simulation						P
样品编号 Sample No.	质量 Mass (g)		质量亏损 Mass loss (%)	电压 Voltage (V)		电压亏损 Voltage loss (%)	有无渗漏，排气，解体，破裂和起火 Whether leakage, venting, disassemble, rupture, fire (Y/N)
	测试前 Pre-test	测试后 After test		测试前 Pre-test	测试后 After test		
Z1	94.041	94.040	0.001	8.37	8.37	0.00	N
Z2	94.639	94.639	0.000	8.38	8.38	0.00	N
Z3	95.484	95.484	0.000	8.37	8.37	0.00	N
Z4	95.133	95.133	0.000	8.38	8.38	0.00	N
X1	95.172	95.172	0.000	8.38	8.37	0.12	N
X2	94.895	94.895	0.000	8.37	8.37	0.00	N
X3	94.555	94.555	0.000	8.38	8.38	0.00	N
X4	94.968	94.968	0.000	8.37	8.37	0.00	N

表 2 Table 2	温度试验 Thermal test						P
样品编号 Sample No.	质量 Mass (g)		质量亏损 Mass loss (%)	电压 Voltage (V)		电压亏损 Voltage loss (%)	有无渗漏，排气，解体，破裂和起火 Whether leakage, venting, disassemble, rupture, fire (Y/N)
	测试前 Pre-test	测试后 After test		测试前 Pre-test	测试后 After test		
Z1	94.040	94.020	0.021	8.37	8.29	0.96	N
Z2	94.639	94.618	0.022	8.38	8.28	1.19	N
Z3	95.484	95.463	0.022	8.37	8.27	1.19	N
Z4	95.133	95.114	0.020	8.38	8.28	1.19	N
X1	95.172	95.151	0.022	8.37	8.29	0.96	N
X2	94.895	94.875	0.021	8.37	8.27	1.19	N
X3	94.555	94.534	0.022	8.38	8.29	1.07	N
X4	94.968	94.947	0.022	8.37	8.28	1.08	N

表 3 Table 3	振动 Vibration						P
样品编号 Sample No.	质量 Mass (g)		质量亏损 Mass loss (%)	电压 Voltage (V)		电压亏损 Voltage loss (%)	有无渗漏，排气，解体，破裂和起火 Whether leakage, venting, disassemble, rupture, fire (Y/N)
	测试前 Pre-test	测试后 After test		测试前 Pre-test	测试后 After test		
Z1	94.020	94.020	0.000	8.29	8.28	0.12	N
Z2	94.618	94.618	0.000	8.28	8.28	0.00	N
Z3	95.463	95.463	0.000	8.27	8.27	0.00	N
Z4	95.114	95.114	0.000	8.28	8.28	0.00	N
X1	95.151	95.150	0.001	8.29	8.29	0.00	N
X2	94.875	94.875	0.000	8.27	8.27	0.00	N
X3	94.534	94.534	0.000	8.29	8.29	0.00	N
X4	94.947	94.947	0.000	8.28	8.28	0.00	N

表 4 Table 4	冲击 Shock						P
样品编号 Sample No.	质量 Mass (g)		质量亏损 Mass loss (%)	电压 Voltage (V)		电压亏损 Voltage loss (%)	有无渗漏，排气，解体，破裂和起火 Whether leakage, venting, disassemble, rupture, fire (Y/N)
	测试前 Pre-test	测试后 After test		测试前 Pre-test	测试后 After test		
Z1	94.020	94.020	0.000	8.28	8.28	0.00	N
Z2	94.618	94.617	0.001	8.27	8.27	0.00	N
Z3	95.463	95.463	0.000	8.28	8.28	0.00	N
Z4	95.114	95.114	0.000	8.28	8.28	0.00	N
X1	95.150	95.150	0.000	8.27	8.27	0.00	N
X2	94.875	94.875	0.000	8.27	8.27	0.00	N
X3	94.534	94.534	0.000	8.28	8.28	0.00	N
X4	94.947	94.947	0.000	8.28	8.27	0.12	N

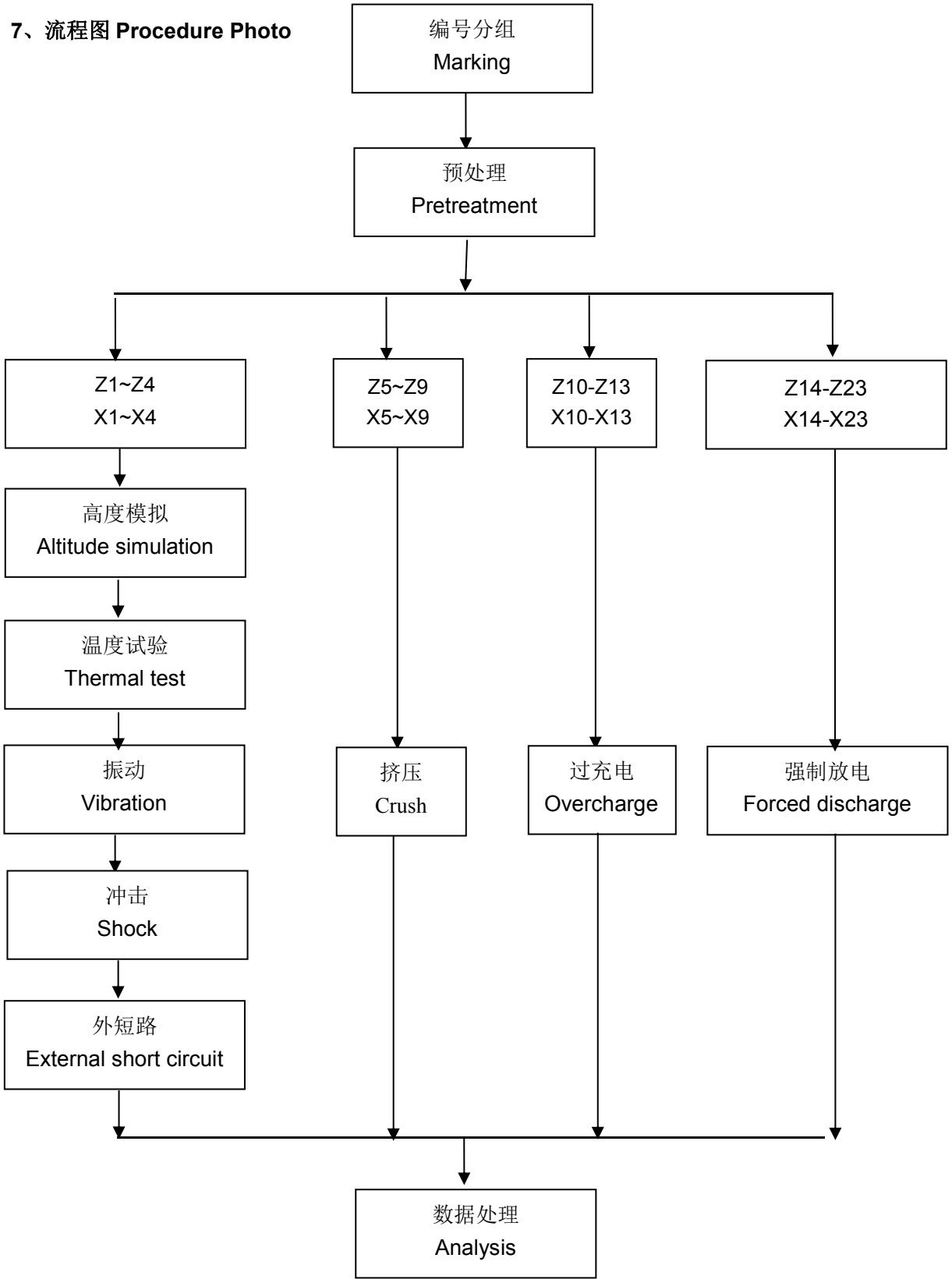
表 5 Table 5	外短路 External short circuit	P
样品编号 Sample No.	最高温度 Peak temperature (˚C)	有无解体，破裂，起火 Whether disassemble, rupture, fire (Y/N)
Z1	57.7	N
Z2	57.9	N
Z3	58.2	N
Z4	58.0	N
X1	57.7	N
X2	57.9	N
X3	58.3	N
X4	57.8	N

表 6 Table 6	挤压 Crush	P
样品编号 Sample No.	最高温度 Peak temperature (˚C)	有无解体，起火 Whether disassemble, fire (Y/N)
Z5	24.9	N
Z6	25.2	N
Z7	25.0	N
Z8	24.6	N
Z9	24.7	N
X5	24.8	N
X6	25.1	N
X7	24.8	N
X8	24.9	N
X9	25.1	N

表 7 Table 7	过度充电 Overcharge	P
样品编号 Sample No.	有无解体，起火 Whether disassemble, fire (Y/N)	
Z10	N	
Z11	N	
Z12	N	
Z13	N	
X10	N	
X11	N	
X12	N	
X13	N	

表 8 Table 8	强制放电 Forced discharge	P
样品编号 Sample No.	有无解体，起火 Whether disassemble, fire (Y/N)	
Z14	N	
Z15	N	
Z16	N	
Z17	N	
Z18	N	
Z19	N	
Z20	N	
Z21	N	
Z22	N	
Z23	N	
X14	N	
X15	N	
X16	N	
X17	N	
X18	N	
X19	N	
X20	N	
X21	N	
X22	N	
X23	N	

7、流程图 Procedure Photo



8、测试设备 Test equipment

AGC-BT-E145	精密天平 Electronic balance
AGC-BT-E154	万用表 Digital multimeter
AGC-BT-E062~E082	电池测试系统 Battery Testing System
AGC-BT-E133	真空试验箱 Vacuum Tester
AGC-BT-E123	快速温变试验箱 Rapid Temperature Change Tester
AGC-BT-E070	振动试验台 Vibration test instrument
AGC-RE-E062	冲击试验台 Mechanical shock test instrument
AGC-BT-E139	温控型电池短路试验机 Battery Short-circuit Tester
AGC-BT-E126	电池挤压试验机 Battery Crush Tester
AGC-BT-E144	数据采集仪 Data Acquisition Instrument
AGC-BT-E054~E056	直流稳压电源 DC power supply

签发测试报告条款 Conditions of Issuance of Test Reports

1. 深圳市鑫宇环检测有限公司(以下简称[本公司])为提供符合下述条款的测试和报告，而接受有关样品和货品。本公司基于下述条款提供服务，下述条款为本公司与申请服务的个人，企业或公司(以下简称[客户])的协议。All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

2. 由此测试申请所发出的任何报告(以下简称[报告])，本公司会严格为客户保密。未经本公司的书面同意，报告的整体或部分不得复制，也不得用于广告或授权的其他用途。然而，客户可以将本公司印制的报告或认可的副本，向其客户、供货商或直接相关的其他人出示或提交。除非相关政府部门、法律或法规要求，否则未经客户同意，本公司不得将报告内容向任何第三方讨论或披露。Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3. 除非相关政府部门、法律或法院要求，否则未经公司预先书面同意，本公司毋需也无义务到法院对有关报告作证。The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. 无 CMA 标志的报告，仅供使用方内部参考，不具有对社会的证明作用。The non-CMA report issued by AGC is only permitted to be used by the client as internal reference use and shall not be used for public demonstration purpose.

5. 如果本公司确定报告被不当地使用，本公司保留撤回报告的权利，并有权要求其它适当的额外赔偿。In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

6. 本公司接受样品进行测试的前提是，该测试报告不能作为针对本公司法律行动的依据。Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

7. 如因使用本公司任何报告内的资料，或任何传播信息所描述与之有关的测试或研究导致的任何损失或损害，本公司概不负责。The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

8. 若需要在法院审理程序或仲裁过程中使用测试报告，客户必须在提交测试样品前将该意图告知本公司。Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

9. 电子版报告更改后将不被追回，客户有义务将更改后的报告提供给使用原报告的相关方。The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

10. 该测试报告的支持数据和信息本公司保存 6 年。个别评审机构有特别要求的，检测数据和报告的保存期可依情况变动。一旦超过上述提交的保存期限，数据和信息将被处理掉。任何情况下，本公司不必提供任何被处理的过期数据或信息。即使本公司事先被告知可能会发生相关的损害，本公司在任何情况下也不必承担任何损害，包括(但不限于)补偿性赔偿、利润损失、数据遗失、或任何形式的特殊损害、附带损害、间接损害、从属损害或任何违反约定、违反承诺、侵权(包括疏忽)、产品责任或其他原因的惩罚性损害。Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.