



中国认可
国际互认
检测
TESTING
CNAS L8169



UN38.3 检测报告

UN38.3 Test Report

报告编号: GTS20240716001-4-01

样品名称: 二次锂离子电池组
Sample name: Lithium Ion Polymer Rechargeable

样品型号: K04-1300mAh-7.4V
Sample model:

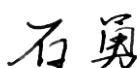
委托单位: 深圳市创客火科技有限公司
Applicant: Shenzhen Makerfire Technology Co.,Ltd

深圳市全球通检测服务有限公司
Shenzhen Global Test Service Co., Ltd



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GST/BAT008 A/O



通用信息 General information				
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样品名称 Sample name	二次锂离子电池组 Lithium Ion Polymer Rechargeable		样品型号 Sample model	K04-1300mAh-7.4V
类别 Classification	Lithium-ion battery 锂离子电池		商标 Trade mark	/
额定值 Ratings	1300mAh, 7.4V, 9.62Wh		样品形状 Shape of sample	灰色近长方体 Gray Almost Cuboid
测试标准 Test standard	联合国《试验和标准手册》(第七修订版修订一) 38.3 节 The sample has passed the items of UN "Manual of Tests and Criteria" ST/SG/AC.10/11/Rev.7/Amend1/Subsection 38.3			
签发日期 Date of issue	2024.08.20		测试日期 Test date	2024.07.16 to 2024.08.20
主检: 杨韬 		审核: 石勇 		签发人: 胡杰 
日期: 2024.08.20		日期: 2024.08.20		日期: 2024.08.20



样品说明及描述 Sample description		
产品名称 Product name	电芯 Cell	二次锂离子电池组 Lithium Ion Polymer Rechargeable
型号 Model	SDL-753562-1300mAh	K04-1300mAh-7.4V
标称电压 Nominal voltage	3.7V	7.4V
额定容量 Rated capacity	1300mAh	1300mAh
标准充电电流 Standard charge current	650mA	650mA
最大持续充电电电流 Max continuous charge current	1300mA	1300mA
标准放电电流 Standard discharge current	650mA	650mA
最大持续放电电流 Max continuous discharge current	32500mA	32500mA
放电终止电压 Cut-off voltage	3.0V	6.0V
尺寸 Dimension	63.5mm*35.5mm*7.8mm	64.0mm*36.0mm*16.5mm
重量 Weight	31.2g	75.3g
电芯个数 Cell numbers	2PCS 2S1P	
检测结论 Test conclusion: 本次送检的样品，依据联合国《试验和标准手册》（第七修订版修订一）38.3 节进行检测，测试结果符合标准相关要求。 The samples submitted for this inspection are tested according to UN "Manual of Tests and Criteria"ST/SG/AC.10/11/Rev.7/Amend1/Subsection 38.3. The test results comply with the relevant requirements of the standard.		
修订说明：/ Revision note ：/		



测试概要 Test summary			
ITEM 测试项目	SAMPLE NUMBER 样品编号	STANDARD 执行标准	CONCLUSION 结论
Altitude simulation 高度模拟	B01#~B04#, B05#~B08#	ST/SG/AC.10/11/Rev. 7/Amend1	经测试，该样品符合联合国《试验和标准手册》（第 7 版修订 1）38.3 节标准要求 The sample has passed the items of UN "Manual of Tests and Criteria" ST/SG/AC.10/11/Rev.7/Amend1/Subsection 38.3
Thermal test 热测试			
Vibration 振动			
Shock 冲击			
External short circuit 外部短路			
Crush 挤压	C01#~C05#, C06#~C10#		
Overcharge 过度充电	B09#~B12#, B13#~B16#		
Forced discharge 强制放电	C11#~C20#, C21#~C30#		
Notes 说明： B01#~B04#: Batteries at first cycle in fully charged states; 为第 1 个充放电周期完全充电状态的电池； B05#~B08#: Batteries after 25 cycles ending in fully charged states; 为第 25 个充放电周期后完全充电状态的电池； B09#~B12#: Batteries at first cycle in fully charged states; 为第 1 个充放电周期完全充电状态的电池； B13#~B16#: Batteries after 25 cycles ending in fully charged states; 为第 25 个充放电周期后完全充电状态的电池； C01#~C05#: Cells at first cycle at 50% of the design rated capacity; 为第 1 个充放电周期 50%设计额定容量状态的电芯； C06#~C10#: Cells at 25 cycle at 50% of the design rated capacity; 为第 25 个充放电周期 50%设计额定容量状态的电芯； C11#~C20#: Cell batteries at first cycle in fully discharged states; 为第 1 个充放电周期完全放电状态的电芯； C21#~C30#: Cells after 25 cycles ending in fully discharged states. 为第 25 个充放电周期后完全放电状态的电芯。			

测试程序 Test procedure

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.

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

$$\text{Mass loss(\%)} = (M1-M2) / M1 \times 100$$

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 blow, it shall be considered as “no mass loss”.

小型电芯或电池必须按顺序进行试验 T.1至T.5。试验T.6和T.8应使用未另外试验过的电芯或电池。试验T.7可以使用原先在试验T.1至T.5中使用过的未损坏电池进行, 以便测试交替充电放电过的电池。

质量损失依照下式计算:

$$\text{质量损失(\%)} = (M1-M2)/M1 * 100$$

式中M1 是试验前的质量, M2是试验后的质量。如质量损失不超过下表所列数值, 即视为“无质量损失”。

Mass M of cell or battery 电芯或电池质量M	Mass loss limit 质量损失限值
M<1g	0.5%
1g≤M≤75g	0.2%
M>75g	0.1%

T.1 Altitude simulation

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).

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.

T.1 高度模拟

试验电芯和电池应在压力等于或低于11.6千帕和环境温度为(20°±5°C) 下存放至少6小时。

要求电芯和电池无渗漏、无排气、无解体、无破裂、无起火, 并且每个试验电芯或电池在试验后的开路电压不小于其在进行这一实验前电压的90%。有关电压的要求不适用于完全放电状态的试验电芯和电池。

T.2 Thermal test

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 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°C). For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12 hours.

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.

T.2 热测试

试验电芯和电池应先在试验温度等于72±2°C的条件下存放至少6小时, 接着再在试验温度等于-40±2°C的条件下存放至少6小时。两个极端试验温度之间的最大时间间隔为30分钟。此程序重复进行, 完成10次, 接着将所有试验电芯和电池在环境温度(20±5°C)下存放24小时。对于大型电芯和电池, 暴露于极端试

测试程序 Test procedure

验温度的时间至少应为12小时。

要求电芯和电池无渗漏、无排气、无解体、无破裂和无起火,并且每个试验电芯或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%。有关电压的要求不适用于完全放电状态的试验电芯和电池。

T.3 Vibration

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.

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).

For cells and small batteries: from 7 Hz a peak acceleration of 1 gn 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 gn occurs (approximately 50 Hz). A peak acceleration of 8 gn is then maintained until the frequency is increased to 200 Hz.

For large batteries: from 7 Hz to a peak acceleration of 1 gn 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 2 gn occurs (approximately 25 Hz). A peak acceleration of 2 gn is then maintained until the frequency is increased to 200 Hz.

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.

T.3 振动

电芯和电池紧固于振动机平台,但紧固程度不能造成电芯变形以致不能准确传递振动。振动应是正弦波形,对数频率扫描从7赫兹和200赫兹,再回到7赫兹,跨度为15分钟。这一振动过程须对三个相互垂直的电芯安装方位的每一方向重复进行12次,共为时3小时。其中一个振动方向必须与端面垂直。

作对数式频率扫描,对总质量不足12千克的电芯和电池(电芯和小型电池),和对12千克及更大的电池(大型电池)有所不同。对电芯和小型电池:从7赫兹开始,保持1 gn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(总位移1.6毫米),并增加频率直到最大加速度达到8 gn(频率约为50赫兹)。将最大加速度保持在8 gn直到频率增加到200赫兹。

对大型电池:从7赫兹开始,保持1 gn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(总行程1.6毫米)并增加频率直到最大加速度达到2 gn(频率约为25赫兹)。将最大加速度保持在2 gn直到频率增加到200赫兹。要求电芯和电池无渗漏、无排气、无解体、无破裂和无起火,并且每个试验电芯或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%。有关电压的要求不适用于完全放电状态的试验电芯和电池。

T.4 Shock

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 shall be subjected to a half-sine shock of peak acceleration of 150 gn and pulse duration of 6 milliseconds. Alternatively, large cells may be subjected to a half-sine shock of peak acceleration of 50 gn and pulse duration of 11 milliseconds

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 calculate the appropriate minimum peak accelerations.

测试程序 Test procedure

Battery 电池	Minimum peak acceleration 最小峰值加速度	Pulse duration 脉冲持续时间
Small batteries 小型电池	150 gn or result of formula Acceleration(gn)= $\sqrt{\left(\frac{100850}{\text{mass}^*}\right)}$ whichever is smaller	6 ms
Large batteries 大型电池	50 gn or result of formula Acceleration(gn)= $\sqrt{\left(\frac{30000}{\text{mass}^*}\right)}$ whichever is smaller	11 ms

* Mass is expressed in kilograms.

Each cell or battery shall be subjected to three shocks in the positive direction and to three shocks in the negative direction in each of three mutually perpendicular mounting positions of the cell or battery for a total of 18 shocks.

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.

T.4 冲击

试验电芯和电池用坚固支架紧固在试验机上, 支架支撑着每个试验电池的所有安装面。

每个电芯须经受最大加速度150 gn和脉冲持续时间6毫秒的半正弦波冲击。不过, 大型电芯需须经受最大加速度50 gn和脉冲持续时间11毫秒的半正弦波冲击。

每个电芯须经受半正弦波冲击的峰值加速度取决于电池的质量。对小型电池的脉冲持续时间为6毫秒, 对大型电池的脉冲持续时间为11毫秒。上面的公式用于计算合适的最低限度最大加速度。

每个电芯或电池须在三个相互垂直的电芯或电池安装方位的正极方向经受三次冲击, 接着在负极方向经受三次冲击, 总共经受18次冲击。

要求电芯和电池无渗漏、无排气、无解体、无破裂和无起火, 并且每个试验电芯或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%。有关电压的要求不适用于完全放电状态的试验电芯和电池。

T.5 External short circuit

The cell or battery to be tested shall be 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 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°C shall be 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 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.

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.

测试程序 Test procedure

T.5外部短路

对于待试电芯或电池,应加温一段必要的时间,使从外壳测量的温度达到均匀的稳定温度 $57\pm 4^{\circ}\text{C}$,这段时间的长短取决于电芯或电池的大小和设计,对于这个持续时间应加以评估和记录。如无法进行这种评估,则小型电芯或电池的暴露时间应至少持续6小时,大型电芯或电池的暴露时间应至少持续12小时。然后,电芯或电池在 $57\pm 4^{\circ}\text{C}$ 下经受总外电阻小于0.1欧姆的短路条件。

这一短路条件应在电芯或电池外壳温度回到 $57\pm 4^{\circ}\text{C}$ 后持续至少1小时,或在大电池的情况下外壳温度降幅达试验中所观察的最高温升幅的二分之一并保持低于此温度值。

短路和降温阶段应至少相当于环境温度。

要求电芯和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。

T.6 Impact / Crush

Impact (applicable to cylindrical cells greater than 18 mm in diameter)

The sample cell or component cell is to be placed on a flat smooth surface. A $15.8 \pm 0.1\text{mm}$ 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 $9.1 \pm 0.1\text{ kg}$ mass is to be dropped from a height of $61 \pm 2.5\text{ cm}$ 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 $15.8 \pm 0.1\text{mm}$ diameter curved surface lying across the centre of the test sample. Each sample is to be subjected to only a single impact.

Crush (applicable to prismatic, pouch, coin/button cells and cylindrical cells not more than 18 mm in diameter)

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.

- (a) The applied force reaches $13 \pm 0.78\text{ kN}$;
- (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 shall be 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 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.

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.

T.6 撞击/挤压

撞击 (适用于直径不小于18毫米的圆柱形电芯)

试样电芯或组成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,或电芯最长端的尺度,取二者之长者。将一块 9.1 ± 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水平支撑表面呈90度落下。

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。

测试程序 Test procedure

挤压(棱柱形、袋装、硬币/纽扣电芯和直径小于18毫米的圆柱形电芯)

将电芯或组成电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厘米/秒。挤压持续进行,直到出现以下三种情况之一:

施加的力量达到 13 ± 0.78 千牛顿;

电芯的电压下降至少100毫伏;或

电芯变形达到原始厚度的50%或以上。

一旦达到最大压力、电压下降100毫伏或更多,或电芯变形至少达原厚度的50%,即可解除压力。

棱柱形或袋装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。圆柱形电芯应从与纵轴垂直的方向施压。

每个试样电芯或组成电芯只做一次挤压试验。试样应继续观察6小时。试验应使用之间未做过其他试验的电芯或组成电芯进行。

要求电芯或组成电芯外壳温度不超过 170°C ,并且在试验过程中及试验后6小时内无解体,无起火。

T.7 Overcharge

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.

Rechargeable batteries meet this requirement if there is no disassembly and no fire during the test and within seven days after the test.

T.7 过度充电

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。

要求可充电电池在试验过程中和试验后7天内无解体,无起火。

T.8 Forced discharge

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.

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).

Primary or rechargeable cells meet this requirement if there is no disassembly and no fire during the test and within seven days after the test.

T.8 强制放电

每个电芯应在环境温度下与12伏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的条件下强制放电。

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)。

要求原电芯或可充电电芯在试验过程中和试验后7天内无解体,无起火。



测试数据:

T.1	高度模拟: Altitude simulation						P
样品编号 Sample No.	测试前 Before test		测试后 After Test		质量损失 Mass loss (%)	剩余电压 Residual OCV (%)	测试结果 Test result
	样品质量 M ₁ Mass(g)	开路电压 Voltage	样品质量 M ₂ Mass(g)	开路电压 Voltage			
B01#	75.262	8.168	75.254	8.142	0.011%	99.682%	O
B02#	75.251	8.165	75.238	8.148	0.017%	99.792%	O
B03#	75.228	8.148	75.211	8.136	0.023%	99.853%	O
B04#	75.232	8.146	75.216	8.122	0.021%	99.705%	O
B05#	75.156	8.065	75.126	7.955	0.040%	98.636%	O
B06#	75.148	8.056	75.122	7.985	0.035%	99.119%	O
B07#	75.152	8.045	75.121	7.962	0.041%	98.968%	O
B08#	75.146	8.044	75.114	7.962	0.043%	98.981%	O
其他补充: 测试结果“O”代表判定该测试无渗漏, 无排气, 无解体, 无破裂, 无起火。 Supplements: Test result "O" decides that the test no leakage, no venting, no disassembly, no rupture, no fire.							

T.2	温度测试: Thermal test						P
样品编号 Sample No.	测试前 Before test		测试后 After Test		质量损失 Mass loss (%)	剩余电压 Residual OCV (%)	测试结果 Test result
	样品质量 M ₁ Mass(g)	开路电压 Voltage	样品质量 M ₂ Mass(g)	开路电压 Voltage			
B01#	75.254	8.142	75.242	8.116	0.016%	99.681%	O
B02#	75.238	8.148	75.218	8.121	0.027%	99.669%	O
B03#	75.211	8.136	75.189	8.115	0.029%	99.742%	O
B04#	75.216	8.122	75.196	8.112	0.027%	99.877%	O
B05#	75.126	7.955	75.085	7.789	0.055%	97.913%	O
B06#	75.122	7.985	75.092	7.821	0.040%	97.946%	O
B07#	75.121	7.962	75.087	7.815	0.045%	98.154%	O
B08#	75.114	7.962	75.074	7.806	0.053%	98.041%	O
其他补充: 测试结果“O”代表判定该测试无渗漏, 无排气, 无解体, 无破裂, 无起火。 Supplements: Test result "O" decides that the test no leakage, no venting, no disassembly, no rupture, no fire.							



T.3	振动: Vibration						P
样品编号 Sample No.	测试前 Before test		测试后 After Test		质量损失 Mass loss (%)	剩余电压 Residual OCV (%)	测试结果 Test result
	样品质量 M ₁ Mass(g)	开路电压 Voltage	样品质量 M ₂ Mass(g)	开路电压 Voltage			
B01#	75.242	8.116	75.234	8.012	0.011%	98.719%	O
B02#	75.218	8.121	75.205	8.021	0.017%	98.769%	O
B03#	75.189	8.115	75.176	8.005	0.017%	98.644%	O
B04#	75.196	8.112	75.168	8.011	0.037%	98.755%	O
B05#	75.085	7.789	75.048	7.689	0.049%	98.716%	O
B06#	75.092	7.821	75.052	7.686	0.053%	98.274%	O
B07#	75.087	7.815	75.056	7.656	0.041%	97.965%	O
B08#	75.074	7.806	75.041	7.642	0.044%	97.899%	O
其他补充: 测试结果“O”代表判定该测试无渗漏, 无排气, 无解体, 无破裂, 无起火。 Supplements: Test result "O" decides that the test no leakage, no venting, no disassembly, no rupture, no fire.							

T.4	冲击: Shock						P
样品编号 Sample No.	测试前 Before test		测试后 After Test		质量损失 Mass loss (%)	剩余电压 Residual OCV (%)	测试结果 Test result
	样品质量 M ₁ Mass(g)	开路电压 Voltage	样品质量 M ₂ Mass(g)	开路电压 Voltage			
B01#	75.234	8.012	75.221	7.955	0.017%	99.289%	O
B02#	75.205	8.021	75.186	7.943	0.025%	99.028%	O
B03#	75.176	8.005	75.156	7.951	0.027%	99.325%	O
B04#	75.168	8.011	75.145	7.941	0.031%	99.126%	O
B05#	75.048	7.689	75.016	7.511	0.043%	97.685%	O
B06#	75.052	7.686	75.012	7.522	0.053%	97.866%	O
B07#	75.056	7.656	75.008	7.534	0.064%	98.406%	O
B08#	75.041	7.642	75.011	7.543	0.040%	98.705%	O
其他补充: 测试结果“O”代表判定该测试无渗漏, 无排气, 无解体, 无破裂, 无起火。 Supplements: Test result "O" decides that the test no leakage, no venting, no disassembly, no rupture, no fire.							



T.5	外部短路：External short circuit	P
样品编号 Sample No.	样品表面最高温度 Max external temperature (°C)	Test result 测试结果
B01#	62.2	O
B02#	66.1	O
B03#	61.5	O
B04#	63.3	O
B05#	73.6	O
B06#	72.1	O
B07#	69.5	O
B08#	66.8	O
其他补充：测试结果“O”代表判定该测试无解体，无破裂，无起火。 Supplements：Test result "O" decides that the test no disassembly，no rupture，no fire.		

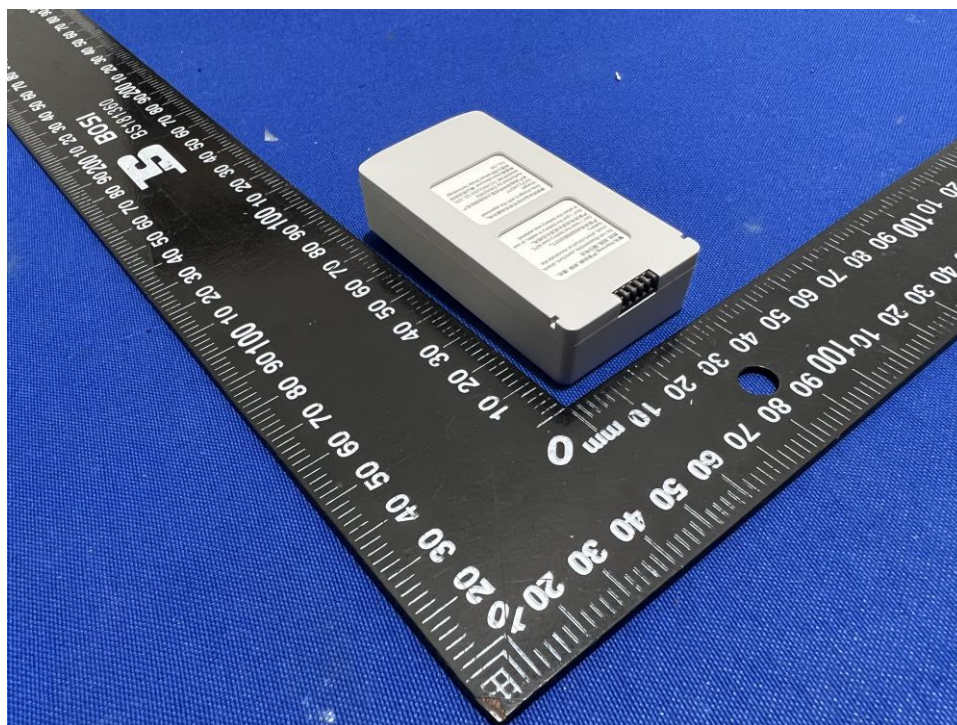
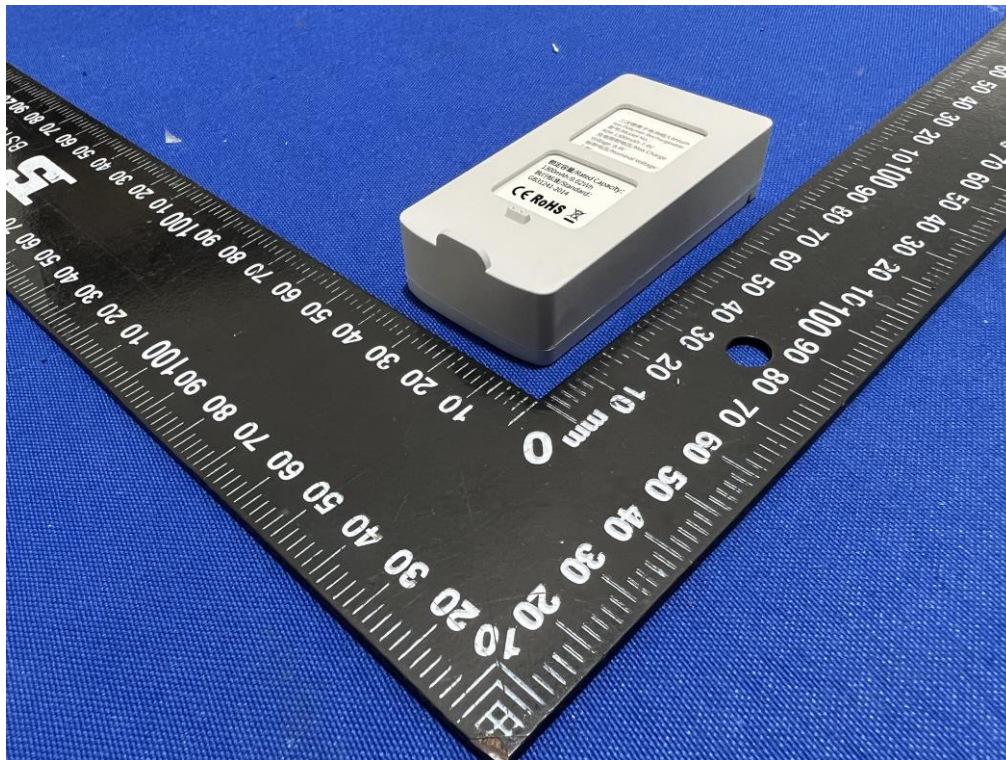
T.6	挤压: Crush				P
样品编号 Sample No	样品表面最高温度 Max external temperature (°C)	测试结果 Test result	样品编号 Sample No	样品表面最高温度 Max external temperature (°C)	测试结果 Test result
C01#	34.3	O	C06#	36.1	O
C02#	34.2	O	C07#	37.2	O
C03#	33.6	O	C08#	34.6	O
C04#	31.6	O	C09#	37.2	O
C05#	34.8	O	C10#	38.4	O
其他补充: 测试结果“O”代表判定该测试无解体, 无破裂, 无起火。 Supplements: Test result "O" decides that the test no disassembly, no fire.					



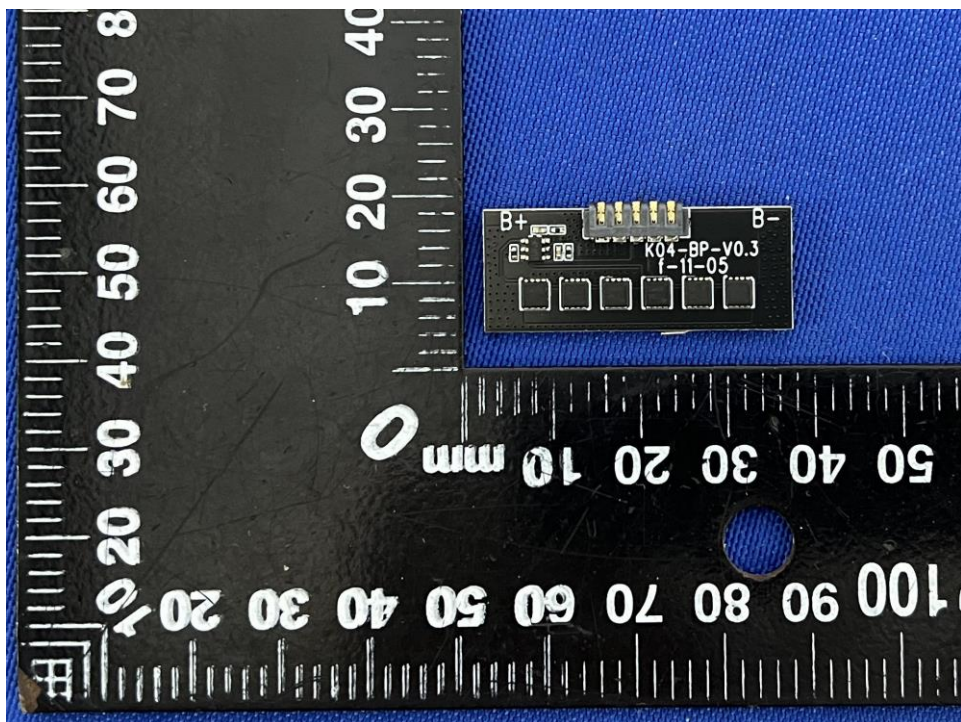
T7	过度充电:Overcharge			P
样品编号 Sample No.	测试结果 Test result	样品编号 Sample No.	测试结果 Test result	
B09#	O	B13#	O	
B10#	O	B14#	O	
B11#	O	B15#	O	
B12#	O	B16#	O	
其他补充: 测试结果“O”代表判定该测试无解体, 无起火。 Supplements : Test result "O" decides that the test no disassembly, no fire.				

T8	强制放电:Forced discharge			P
样品编号 Sample No.	测试结果 Test result	样品编号 Sample No.	测试结果 Test result	
C11#	O	C21#	O	
C12#	O	C22#	O	
C13#	O	C23#	O	
C14#	O	C24#	O	
C15#	O	C25#	O	
C16#	O	C26#	O	
C17#	O	C27#	O	
C18#	O	C28#	O	
C19#	O	C29#	O	
C20#	O	C30#	O	
其他补充: 测试结果“O”代表判定该测试无解体, 无起火。 Supplements : Test result "O" decides that the test no disassembly, no fire.				

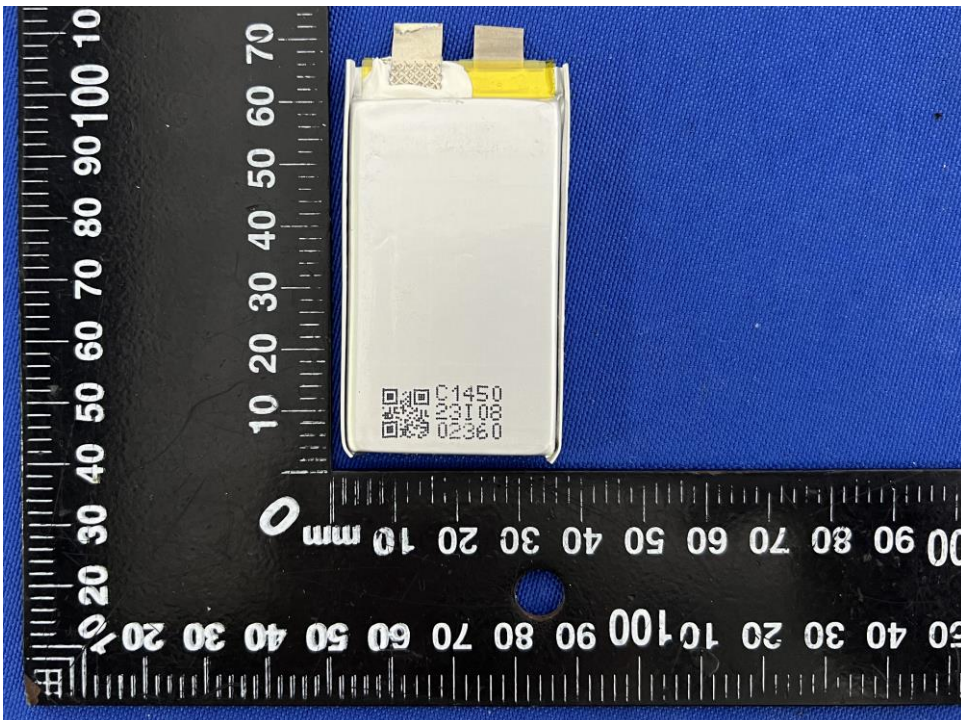
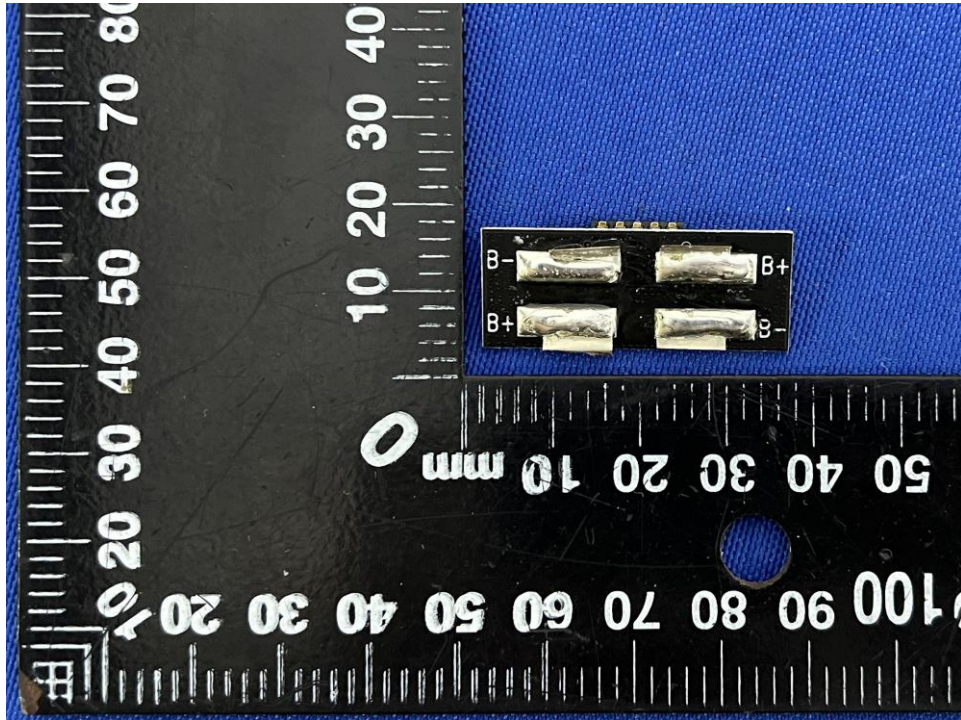
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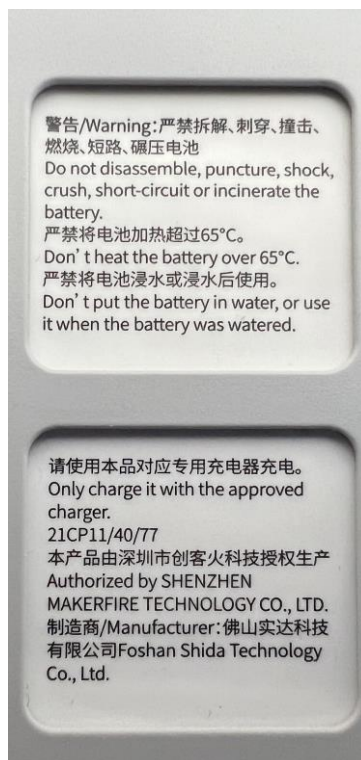
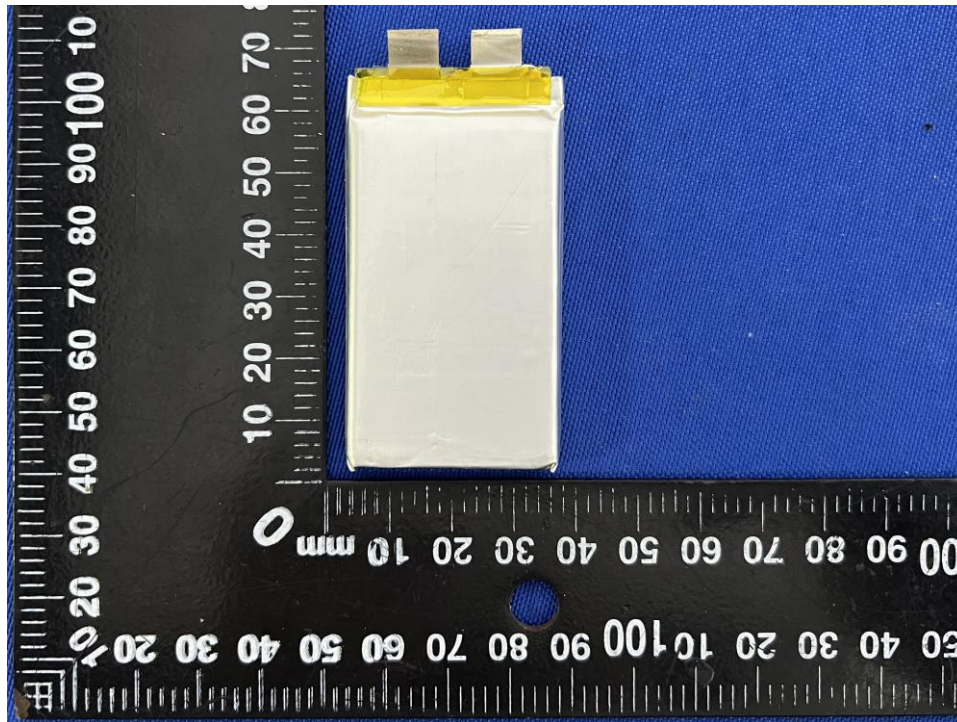
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