



UN38.3 TEST REPORT

UN38.3 测试报告

Report No. : CTB25061100601D01
报告编号 :
Name of Sample : Li-ion Battery
产品名称 : 锂离子电池
Model Specification : 400835
产品型号 :
Type : 3.7V,110mAh,0.407Wh
规格 :
Applicant : SHENGZHEN JINGYU NEW
申请商 : ENERGY CO.,LTD.
深圳市精宇新能源有限公司
Classification of test : Commission Test
检测类别 : 委托测试

Shenzhen CTB Testing Technology Co., Ltd.
深圳市环测威检测技术有限公司

TEST REPORT**测试报告**

Report No..... 报告号.....	CTB25061100601D01	
Testing Laboratory Name 测试实验室.....	Shenzhen CTB Testing Technology Co., Ltd. 深圳市环测威检测技术有限公司	
Address 地址.....	1&2/F., Building A, No. 26, Xinhe Road, Xinqiao, Xinqiao Street, Bao' an District, Shenzhen, Guangdong, China 广东省深圳市宝安区新桥街道新桥社区新和大道26号A栋1层、二楼	
Contents..... 页数.....	20 pages	
Date of issue 签发日期.....	2025.06.25	
Tested by (+ signature) 测试(签名)	Judy Luo/罗佳绮	
Checked by (+ signature) 审核(签名)	Ming Zhu/朱慧明	
Approved by (+ signature) 批准(签名)	Kubo Lee/李孟宇	
Applicant's Name 申请商.....	SHENGZHEN JINGYU NEW ENERGY CO.,LTD 深圳市精宇新能源有限公司	
Address 地址.....	213, Building A2, Fuhai B2 District, Fuyong Community, Fuyong Street, Bao'an District, Shenzhen 深圳市宝安区福永街道福永社区福海 B2区 A2栋 213	
Manufacturer 制造商.....	ZHONGSHAN JINGYU ELECTRONICS CO., LTD 中山市精宇电子科技有限公司	
Address 地址.....	1-3 floors, Building 25, Qiaoguang Industrial Park, Nanlang Town, Zhongshan City, Guangdong Province 广东省中山市南朗镇侨光工业园25栋1-3楼	
Telephone Number..... 联系电话.....	15016108798	
Email address..... 邮件地址.....	sales.anna@jy-energy.com	
Website..... 网址.....	/	
Standard 标准.....	UN Recommendations on the Transport of Dangerous Goods Manual of Tests and Criteria (ST/SG/AC.10/11/Rev.8, Subsection 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8版) 38.3节。	

Shenzhen CTB Testing Technology Co., Ltd. 深圳市环测威检测技术有限公司

Add: 1&2/F., Building A, No. 26, Xinhe Road, Xinqiao, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China

地址: 广东省深圳市宝安区新桥街道新桥社区新和大道26号A栋1层、二楼

Tel: 4008-707-283

Web: <http://www.ctb-lab.net>Email: ctb@ctb-lab.net

Name of sample.....:	Li-ion Battery
样品名称.....:	锂离子电池
Trade Mark	//
商标.....:	
Model.....:	400835
型号.....:	
Ratings.....:	3.7V, 110mAh, 0.407Wh
额定值.....:	
Quantity.....:	30 Cells, 18 Battery
样品数量.....:	30个电芯, 18个电池组
Appearance.....:	Black Cuboid
样品外观.....:	黑色长方体

Details information of the battery and the cell built in the battery, as following:

电池和电芯的详细信息见下表:

Product 产品	Cell 电芯	Battery 电池
Model 型号	400835	400835
Nominal voltage 标称电压	3.7V	3.7V
Rated capacity 额定容量	110mAh	110mAh
Standard charge current 标准充电电流	22mA	22mA
Standard discharge current 标准放电电流	22mA	22mA
Maximum continuous charging current 最大连续充电电流	55mA	55mA
Maximum continuous discharge current 最大连续放电电流	55mA	55mA
Charge voltage 充电电压	4.2V	4.2V
Charge cut-off current 充电截止电流	2.2mA	2.2mA
Discharge voltage 放电电压	3.0V	3.0V
Dimension 尺寸	34.97*8.12*4.14(mm)	36.69*8.12*4.14(mm)
Weight 重量	2.022g	2.244g

Possible test case verdicts: 报告中可能用到的结论标识:	
Test case does not apply to the test object..... 测试项目不适用于该产品.....	N/A 不适用
Test item does meet the requirement 测试项目符合标准的要求.....	P(ass) 合格
Test item does not meet the requirement 测试项目不符合标准的要求.....	F(ail) 不合格
Testing: 测试:	
Date of sample received..... 样品接收日期.....	2025.06.11
Date(s) of performance of test..... 测试执行日期.....	2025.06.11 ~ 2025.06.25
Test environment conditions..... 检测环境条件.....	Ambient temperature:20℃±5℃, Ambient humidity:45%-75%. 环境温度: 20℃±5℃, 环境湿度: 45%-75%
Test result: Pass 检验结果: 通过	

Description and illustration of the sample/样品说明及描述:

The sample is a lithium ion battery(1S1P),the sample's status is good/样品为锂离子电池（1S1P），样品状况良好。

Test items and conclusion./测试项目及结论

Item 项目	Sample Number 样品编号	Standard 标准	Conclusion 结论
Altitude simulation 高空模拟	B01-B05 B06-B10	UN Recommendations on the Transport of Dangerous Goods Manual of Tests and Criteria (ST/SG/AC.10/11/Rev.8, Subsection 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8版）38.3节。	PASS 合格
Thermal test 耐热测试			PASS 合格
Vibration 振动测试			PASS 合格
Shock 冲击测试			PASS 合格
External short circuit 外部短路			PASS 合格
Crush/ Impact 挤压/撞击	C01-C05 C06-C10		PASS 合格
Overcharge 过充电测试	B11-B14 B15-B18		PASS 合格
Forced discharge 强制放电测试	C11-C20 C21-C30		PASS 合格

Sample Pretreatment /样品预处理:

Sample Number/样品编号	State/ 状态
B01-B05, B11-B14	Batteries at first cycle,in fully charged state. 第1个充放电周期完全充电状态的电池。
B06-B10, B15-B18	Batteries after 25th cycle,in fully charged state. 第25个充放电周期后完全充电状态的电池。
C01-C05	Cell at first cycle at 50% of the design rated capacity. 第1个充放电周期后充电到设计额定容量的50%的电芯。
C06-C10	Cell after 25th cycle at 50% of the design rated capacity. 第25个充放电周期后充电到设计额定容量的50%的电芯。
C11-C20	Cells at first cycle, in fully discharged state. 第1个充放电周期完全放电状态的电芯。
C21-C30	Cell after 25th cycle, ending in fully discharged state. 第25个充放电周期后完全放电状态的电芯。

Shenzhen CTB Testing Technology Co., Ltd. 深圳市环测威检测技术有限公司

Add: 1&2/F., Building A, No. 26, Xinhe Road, Xinqiao, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China

地址: 广东省深圳市宝安区新桥街道新桥社区新和大道26号A栋1层、二楼

Tel: 4008-707-283

Web: <http://www.ctb-lab.net>

Email: ctb@ctb-lab.net

Test Method and Data

测试方法和数据

Test Requirement 测试要求

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.

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.

小型电池或电池组必须按顺序进行试验T1至T5。试验T6和T8应使用未试验过的电池或电池组。试验T7可以使用原先在试验T1至T5中使用过的未损坏的电池组进行，以便测试交替充电放电的电池组。

要求电池和电池组无渗漏、无漏气、无解体、无破裂和无起火并且每个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电池和电池组。

Table 38.3.1: Mass loss limit 表38.3.1: 质量损失限值	
Mass M of cell or battery 电池或电池组质量M	Mass lost limited 质量损失限值
$M < 1\text{g}$	0.5%
$1\text{g} \leq M \leq 75\text{g}$	0.2%
$M > 75\text{g}$	0.1%

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

$$\text{mass loss} = (M_1 - M_2) / M_1 \times 100\%$$

Where M_1 is the mass before the test and M_2 is the mass after the test, when mass loss does not exceed the values in Table below, it shall be considered as “no mass loss”.

质量损失依照下式计算：

$$\text{质量损失} = (M_1 - M_2) / M_1 \times 100\%$$

式中 M_1 是试验前的质量， M_2 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”。

ST/SG/AC.10/11/Rev.8, Subsection 38.3

Clause 章节	Requirements 标准要求	Result 测试结果	Verdict 判定
38.3.4	Procedure/测试步骤		
38.3.4.1	Test T.1: Altitude simulation 高度模拟 Test cells and batteries shall be stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature ($20 \pm 5^\circ\text{C}$). 试验样品在压力不大于11.6kPa和环境温度$20^\circ\text{C} \pm 5^\circ\text{C}$的环境下存放至少6小时。 Requirement 标准要求: 1)Cells and batteries mass loss limit reference:Table 38.3.1 样品质量损失限值参考: 表38.3.1 2)Open circuit voltage not less than 90% ,this requirement relating to voltage is not applicable to test cells and batteries at full discharged states. 样品试验后开路电压应不低于试验前开路电压的90%, 此要求不适用于完全放完电的电池或电池组。 3)no leakage, no venting, no disassembly, no rupture and no fire. 样品应无漏液、无漏气、无解体、无破裂以及无起火现象的发生。	The samples no leakage, no venting, no disassembly, no rupture and no fire. 样品无漏液、无漏气、无解体、无破裂以及无起火现象。 The data is shown in Table T.1 数据见表 T.1	Pass 合格
38.3.4.2	Test T.2: Thermal test 温度试验 1)For small cells and batteries:one temperature cycle: $72 \pm 2^\circ\text{C}(6\text{h}) \sim -40 \pm 2^\circ\text{C}(6\text{h})$ 对于小型电池和电池组: 一次温度循环为$72 \pm 2^\circ\text{C}(6\text{h}) \sim -40 \pm 2^\circ\text{C}(6\text{h})$ For large cells and batteries:one temperature cycle: $72 \pm 2^\circ\text{C}(12\text{h}) \sim -40 \pm 2^\circ\text{C}(12\text{h})$ 对于大型电池和电池组: 一次温度循环为$72 \pm 2^\circ\text{C}(12\text{h}) \sim -40 \pm 2^\circ\text{C}(12\text{h})$ 2)The maximum time interval between test temperature extremes is 30minutes. 温度转换最大间隔时间为30min. 3)This procedure is to be repeated 10 times. 重复10次循环。 4)after which all test cells and batteries are to be stored for 24 hours at ambient temperature($20 \pm 5^\circ\text{C}$) 循环结束后, 所有样品在环境温度$20^\circ\text{C} \pm 5^\circ\text{C}$下存放24小时。 Requirement 标准要求: 1)Cells and batteries mass loss limit reference:Table 38.3.1 样品质量损失限值参考: 表38.3.1 2)Open circuit voltage not less than 90% ,this requirement relating to voltage is not applicable to test cells and batteries at full discharged states. 样品试验后开路电压应不低于试验前开路电压的90%, 此要求不适用于完全放完电的电池或电池组。 3)no leakage, no venting, no disassembly, no rupture and no fire. 样品应无漏液、无漏气、无解体、无破裂以及无起火现象的发生。	The samples no leakage, no venting, no disassembly, no rupture and no fire. 样品无漏液、无漏气、无解体、无破裂以及无起火现象。 The data is shown in Table T.2 数据见表 T.2	Pass 合格

ST/SG/AC.10/11/Rev.8, Subsection 38.3

Clause 章节	Requirements 标准要求	Result 测试结果	Verdict 判定
38.3.4.3	Test T.3: Vibration 振动 1) Cells and batteries are firmly secured to the platform of the vibration machine. 样品牢固地安装在振动台（的台面）上。 2) The vibration: a sinusoidal waveform with a logarithmic sweep between 7Hz and 200Hz and back to 7Hz traversed in 15 minutes. 振动以正弦波形式，对数扫描频率从7Hz增加至200Hz，然后再回到7Hz，一个循环持续15分钟。 3) The logarithmic frequency sweep is as follows: from 7 Hz a peak acceleration of 1gn is maintained until 18 Hz is reached, The amplitude is then maintained at 0,8mm (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 200 Hz. 对于小电池和小型电池组的对数扫频为:从7 赫兹开始保持1gn 的最大加速度直到频率为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8gn（频率约为50 赫兹），将最大加速度保持在8gn 直到频率增加到200 赫兹。 The logarithmic frequency sweep is as follows: from 7 Hz a peak acceleration of 1 gn is maintained until 18 Hz is reached, The amplitude is then maintained at 0,8mm (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 200 Hz. 对于大型电池组的对数扫频为:对数扫频为:从7 赫兹开始保持1gn 的最大加速度直到频率为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2gn（频率约为25赫兹），将最大加速度保持在2gn直到频率增加到200 赫兹。 4) This cycle repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting position of the cell. One of the directions of vibration must be perpendicular to the terminal face. 以振动的其中一个方向必须是垂直样品极性，对每个样品从三个互相垂直的方向上循环12次，每个方向3小时，共计9小时。		Pass 合格
	Requirement 标准要求: 1) Cells and batteries mass loss limit reference: Table 38.3.1 样品质量损失限值参考: 表38.3.1 2) Open circuit voltage not less than 90% ,this requirement relating to voltage is not applicable to test cells and batteries at full discharged states. 样品试验后开路电压应不低于试验前开路电压的90%，此要求不适用于完全放完电的电池或电池组。 3) no leakage, no venting, no disassembly, no rupture and no fire. 样品应无漏液、无漏气、无解体、无破裂以及无起火现象的发生。	The samples no leakage, no venting, no disassembly, no rupture and no fire. 样品无漏液、无漏气、无解体、无破裂以及无起火现象。 The data is shown in Table T.3 数据见表 T.3	

ST/SG/AC.10/11/Rev.8, Subsection 38.3

ST/SG/AC.10/11/Rev.8, Subsection 38.3

Clause 章节	Requirements 标准要求	Result 测试结果	Verdict 判定								
38.3.4.4	Test T.4: Shock 冲击 1) Test cell and battery shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery. 试验电池和电池组用坚固支架紧固在试验机上，支架支撑着每个试验电池组的所有安装面。 2) Each cell or battery shall be subjected to a half sine shock of peak acceleration of 150gn and pulse duration of 6 milliseconds. Alternatively, large cells and large batteries may be subjected to a half-sine shock of peak acceleration of 50gn and pulse duration of 11 milliseconds. 每个电池须经受最大加速度150 gn和脉冲持续时间6毫秒的半正弦波冲击。不过，大型电池须经受最大加速度50 gn和脉冲持续时间11毫秒的半正弦波冲击。 3) Each cell or 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. 每个电池须经受的正弦波冲击的最大加速度取决于电池组的质量。小型电池组的脉冲持续时间6毫秒，大型电池组的脉冲持续时间11毫秒。以下公式用于计算合适的最低限度最大加速度。 <table><tr><th>Battery</th><th>Minimum peak acceleration</th><th>Pulse duration</th></tr><tr><td>Small batteries</td><td>150 gn or result of formula Acceleration(g_n) = $\sqrt{\left(\frac{100850}{\text{mass}^*}\right)}$ whichever is smaller</td><td>6 ms</td></tr><tr><td>Large batteries</td><td>50 gn or result of formula Acceleration(g_n) = $\sqrt{\left(\frac{30000}{\text{mass}^*}\right)}$ whichever is smaller</td><td>11 ms</td></tr></table> 4)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. 每个电池或电池组须在三个互相垂直的电池或电池组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 标准要求: 1)Cells and batteries mass loss limit reference:Table 38.3.1 样品质量损失限值参考：表38.3.1 2)Open circuit voltage not less than 90% ,this requirement relating to voltage is not applicable to test cells and batteries at full discharged states. 样品试验后开路电压应不低于试验前开路电压的90%，此要求不适用于完全放完电的电池或电池组。 3)no leakage, no venting, no disassembly, no rupture and no fire. 样品应无漏液、无漏气、无解体、无破裂以及无起火现象的发生。 The samples no leakage, no venting, no disassembly, no rupture and no fire. 无漏液、无漏气、无解体、无破裂以及无起火现象。 The data is shown in Table T.4 数据见表 T.4 <td>Pass 合格</td>	Battery	Minimum peak acceleration	Pulse duration	Small batteries	150 gn or result of formula Acceleration(g _n) = $\sqrt{\left(\frac{100850}{\text{mass}^*}\right)}$ whichever is smaller	6 ms	Large batteries	50 gn or result of formula Acceleration(g _n) = $\sqrt{\left(\frac{30000}{\text{mass}^*}\right)}$ whichever is smaller	11 ms	Pass 合格
Battery	Minimum peak acceleration	Pulse duration									
Small batteries	150 gn or result of formula Acceleration(g _n) = $\sqrt{\left(\frac{100850}{\text{mass}^*}\right)}$ whichever is smaller	6 ms									
Large batteries	50 gn or result of formula Acceleration(g _n) = $\sqrt{\left(\frac{30000}{\text{mass}^*}\right)}$ whichever is smaller	11 ms									

ST/SG/AC.10/11/Rev.8, Subsection 38.3

Clause 章节	Requirements 标准要求	Result 测试结果	Verdict 判定
38.3.4.5	Test T.5: External short circuit 外短路测试 1) The cell or battery to be tested shall be heated for a period of time necessary to reach a homogeneous stabilized temperature $57\pm4\text{ }^{\circ}\text{C}$. 加热电池或电池组样品直到温度稳定在$57\pm4\text{ }^{\circ}\text{C}$。 2) The cell or battery shall be subjected to a short circuit condition with a total external resistance of less than 0.1 ohm at $57\pm4\text{ }^{\circ}\text{C}$, This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to $57\pm4\text{ }^{\circ}\text{C}$. 将样品正负极用小于0.1Q 的总电阻回路进行短路, 样品的外表温度恢复到$57\pm4\text{ }^{\circ}\text{C}$之后保持短路状态1小时以上。 3) The cell or battery must be observed for a further six hours for the test to be concluded. 电池或电池组必须进一步观察6个小时才能下结论。 Requirement 标准要求: 1) Cells and batteries meet this requirement if their external temperature does not exceed $170\text{ }^{\circ}\text{C}$ 要求样品外表面温度不超过$170\text{ }^{\circ}\text{C}$, 2) no disassembly, no rupture and no fire during the test and within six hours after the test. 测试中与测试后6 小时内无解体, 无破裂, 无起火。	The samples no disassembly, no rupture and no fire. 样品无解体, 无破裂, 无起火。 The data is shown in Table T.5数据见表 T.5	Pass 合格
38.3.4.6	Test T.6: Impact / Crush 撞击/挤压 Impact (applicable to cylindrical cells not less than 18 mm in diameter) 撞击(适用于直径不小于18 毫米的圆柱形电池) The sample cell or component cell is to be placed on a flat smooth surface. A 15.8 mm $\pm$ 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 $\pm$ 0.1 kg mass is to be dropped from a height of 61 $\pm$ 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 $\pm$ 0.1mm diameter curved surface lying across the Centre of the test sample. Each sample is to be subjected to only a single impact. 将试验样品放在平坦光滑平面上, 将一根长度不少于7cm的316型不锈钢棒横放在试样中心后, 将一质量为9.1kg 的物体从61$\pm$2.5cm 的高度落向样品。待测试电池纵轴与平面平行, 与横放在试样中心的直径15.8$\pm$0.1 毫米弯曲表面的纵轴垂直。每个样品只经受一次撞击。	N/A 不适用 N/A 不适用	N/A 不适用
	Crush (applicable to prismatic, pouch, coin/button cells and cylindrical cells less than 18 mm in diameter) 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)		Pass 合格
	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.		Pass 合格

ST/SG/AC.10/11/Rev.8, Subsection 38.3

Clause 章节	Requirements 标准要求	Result 测试结果	Verdict 判定
	(a) The applied force reaches 13 KN $\pm$ 0.78 KN; (b) The voltage of the cell drops by at least 100 mV; (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. 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1.5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13KN$\pm$ 0.78KN; (b) 样品的电压下降至少100毫伏; (c) 样品变形达原始厚度的50%或以上。 一旦获得最大压力，电压下降100mv或以上，或电池变形至少50%的原始厚度，应释放压力。棱柱形或袋装样品应从最宽的一面施压，纽扣/硬币形样品应从其平坦表面施压，圆柱形样品应从与纵轴垂直的方向施压。每个样品只经受一次挤压。		
	Requirement 标准要求: 1) Cells and batteries meet this requirement if their external temperature does not exceed 170 °C 要求样品外表面温度不超过170°C, 2) no disassembly, no rupture and no fire during the test and within six hours after the test. 测试中与测试后6 小时内无解体, 无破裂, 无起火。	The samples no disassembly, no rupture and no fire during the test and within six hours after the test. 样品无解体, 无破裂, 无起火。 The data is shown in Table T.6 数据见表 T.6	Pass 合格
38.3.4.7	Test T.7: Overcharge 过度充电 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. 以2倍制造厂推荐的最大持续充电电流对样品充电，本测试最小电压为: (a) 如果厂家推荐的充电电压不超过18V，本测试的最小充电电压应该是厂家标定最大充电电压的两倍或者22V之中的较小者。 (b) 如果厂家推荐的充电电压超过18V，本测试的最小充电电压应该1.2倍的厂家标定最大充电电压。		Pass 合格
	Requirement 标准要求:	The samples no	

ST/SG/AC.10/11/Rev.8, Subsection 38.3

ST/SG/AC.10/11/Rev.8, Subsection 38.3

Clause 章节	Requirements 标准要求	Result 测试结果	Verdict 判定
	Rechargeable batteries meet this requirement if there is no disassembly and no fire during the test and within seven days after the test. 要求样品在试验中和试验后7 天内无解体和无起火。	disassembly and no fire /样品无解体, 无起火.The data is shown in Table T.7 数据见表T.7	
38.3.4.8	Test T.8: Forced discharge 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. 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). 每个电池应在环境温度下通过串联12V直流电源强制放电, 初始电流等于制造商规定的最大放电电流。 通过将适当尺寸和额定值的电阻负载串联在测试电池上, 可获得指定的放电电流。每个电池强制放电的时间(单位:小时)等于其额定容量除以初始测试电流(单位:安培)。 Requirement 标准要求: 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./要求样品在试验中和试验后7 天内无解体和无起火。		Pass 合格
	The samples no disassembly and no fire /样品无解体, 无起火.The data is shown in Table T.8 数据见表T.8		

Test Data 测试数据

Table T.1 Altitude simulation (表T.1) 高度模拟

No. 编号	Before test测试前		After test测试后		Mass loss 质量损失 (%)	Voltage loss 电压损失 (%)	Verdict# (判定#)
	Mass(g) 质量(g)	Voltage(V) 电压(V)	Mass(g) 质量(g)	Voltage(V) 电压(V)			
B01	2.244	4.188	2.244	4.188	0.000	0.000	PASS/合格
B02	2.231	4.180	2.231	4.180	0.000	0.000	PASS/合格
B03	2.156	4.182	2.156	4.182	0.000	0.000	PASS/合格
B04	2.174	4.182	2.173	4.181	0.046	0.024	PASS/合格
B05	2.216	4.180	2.216	4.180	0.000	0.000	PASS/合格
B06	2.208	4.183	2.208	4.183	0.000	0.000	PASS/合格
B07	2.180	4.187	2.179	4.187	0.046	0.000	PASS/合格
B08	2.185	4.182	2.185	4.182	0.000	0.000	PASS/合格
B09	2.233	4.182	2.233	4.182	0.000	0.000	PASS/合格
B10	2.216	4.183	2.216	4.183	0.000	0.000	PASS/合格
#: After the test,there is No leakage, No venting, No disassembly No rupture and no fire. And change ratio is not less than 90%. #: 检测后, 样品无漏液、无漏气、无解体、无破裂以及无起火现象。电压比不小于90%。							

Table T.2 Thermal test (表T.2) 温度试验

No. 编号	Before test测试前		After test测试后		Mass loss 质量损失 (%)	Voltage loss 电压损失 (%)	Verdict# (判定#)
	Mass(g) 质量(g)	Voltage(V) 电压(V)	Mass(g) 质量(g)	Voltage(V) 电压(V)			
B01	2.244	4.188	2.240	4.147	0.178	0.979	PASS/合格
B02	2.231	4.180	2.227	4.148	0.179	0.766	PASS/合格
B03	2.156	4.182	2.154	4.142	0.093	0.956	PASS/合格
B04	2.173	4.181	2.170	4.141	0.138	0.957	PASS/合格
B05	2.216	4.180	2.214	4.150	0.090	0.718	PASS/合格
B06	2.208	4.183	2.206	4.143	0.091	0.956	PASS/合格
B07	2.179	4.187	2.176	4.150	0.138	0.884	PASS/合格
B08	2.185	4.182	2.181	4.142	0.183	0.956	PASS/合格
B09	2.233	4.182	2.229	4.143	0.179	0.933	PASS/合格
B10	2.216	4.183	2.212	4.143	0.181	0.956	PASS/合格
#: After the test,there is No leakage, No venting, No disassembly No rupture and no fire. And change ratio is not less than 90%. #: 检测后, 样品无漏液、无漏气、无解体、无破裂以及无起火现象。电压比不小于90%。							

Table T.3 Vibration (表T.3) 振动

No. 编号	Before test测试前		After test测试后		Mass loss 质量损失 (%)	Voltage loss 电压损失 (%)	Verdict# (判定#)
	Mass(g) 质量(g)	Voltage(V) 电压(V)	Mass(g) 质量(g)	Voltage(V) 电压(V)			
B01	2.240	4.147	2.240	4.147	0.000	0.000	PASS/合格
B02	2.227	4.148	2.227	4.147	0.000	0.024	PASS/合格
B03	2.154	4.142	2.153	4.141	0.046	0.024	PASS/合格
B04	2.170	4.141	2.170	4.141	0.000	0.000	PASS/合格
B05	2.214	4.150	2.214	4.150	0.000	0.000	PASS/合格
B06	2.206	4.143	2.205	4.143	0.045	0.000	PASS/合格
B07	2.176	4.150	2.176	4.150	0.000	0.000	PASS/合格
B08	2.181	4.142	2.181	4.142	0.000	0.000	PASS/合格
B09	2.229	4.143	2.229	4.143	0.000	0.000	PASS/合格
B10	2.212	4.143	2.212	4.143	0.000	0.000	PASS/合格

#: After the test,there is No leakage, No venting, No disassembly No rupture and no fire. And change ratio is not less than 90%.

#: 检测后, 样品无漏液、无漏气、无解体、无破裂以及无起火现象。电压比不小于90%。

Table T.4 Shock (表T.4) 冲击

No. 编号	Before test测试前		After test测试后		Mass loss 质量损失 (%)	Voltage loss 电压损失 (%)	Verdict# (判定#)
	Mass(g) 质量(g)	Voltage(V) 电压(V)	Mass(g) 质量(g)	Voltage(V) 电压(V)			
B01	2.240	4.147	2.240	4.147	0.000	0.000	PASS/合格
B02	2.227	4.147	2.227	4.147	0.000	0.000	PASS/合格
B03	2.153	4.141	2.153	4.141	0.000	0.000	PASS/合格
B04	2.170	4.141	2.170	4.140	0.000	0.024	PASS/合格
B05	2.214	4.150	2.212	4.150	0.090	0.000	PASS/合格
B06	2.205	4.143	2.205	4.141	0.000	0.048	PASS/合格
B07	2.176	4.150	2.176	4.148	0.000	0.048	PASS/合格
B08	2.181	4.142	2.179	4.142	0.092	0.000	PASS/合格
B09	2.229	4.143	2.229	4.143	0.000	0.000	PASS/合格
B10	2.212	4.143	2.212	4.143	0.000	0.000	PASS/合格

#: After the test,there is No leakage, No venting, No disassembly No rupture and no fire. And change ratio is not less than 90%.

#: 检测后, 样品无漏液、无漏气、无解体、无破裂以及无起火现象。电压比不小于90%。

Table T.5 External short circuit (表T.5) 外部短路

No. 编号	Peak temperature(°C) 最高温度	Verdict 判定
B01	57.4	PASS/合格
B02	57.2	PASS/合格
B03	57.4	PASS/合格
B04	56.6	PASS/合格
B05	57.1	PASS/合格
B06	56.6	PASS/合格
B07	57.4	PASS/合格
B08	56.9	PASS/合格
B09	56.5	PASS/合格
B10	57.4	PASS/合格
#: Test sample 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. #: 检测样品表面温度不超过170°C, 检测中与检测后6小时内无解体、无破裂以及无起火现象。		

Table T.6 Crush/ Impact (表T.6) 挤压/撞击

No. 编号	Peak temperature(°C) 最高温度	Verdict 判定
C01	23.0	PASS/合格
C02	23.4	PASS/合格
C03	23.0	PASS/合格
C04	23.2	PASS/合格
C05	23.2	PASS/合格
C06	23.3	PASS/合格
C07	23.4	PASS/合格
C08	23.1	PASS/合格
C09	23.2	PASS/合格
C10	23.2	PASS/合格
#: Test sample 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. #: 检测样品表面温度不超过170°C, 检测中与检测后6小时内无解体、无破裂以及无起火现象。		

Table T.7 Overcharge (表T.7) 过充电测试

No. 编号	Verdict 判定
B11	PASS/合格
B12	PASS/合格
B13	PASS/合格
B14	PASS/合格
B15	PASS/合格
B16	PASS/合格
B17	PASS/合格
B18	PASS/合格
#: There is no disassembly and no fire during the test and within seven days after the test. #: 样品在检测中与检测后7天内无解体及无起火现象。	

Table T.8 Forced discharge (表T.8) 强制放电

No. 编号	Verdict 判定
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
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
#: There is no disassembly and no fire during the test and within seven days after the test. #: 样品在检测中与检测后7天内无解体及无起火现象。	

Photo of Sample 样品照片

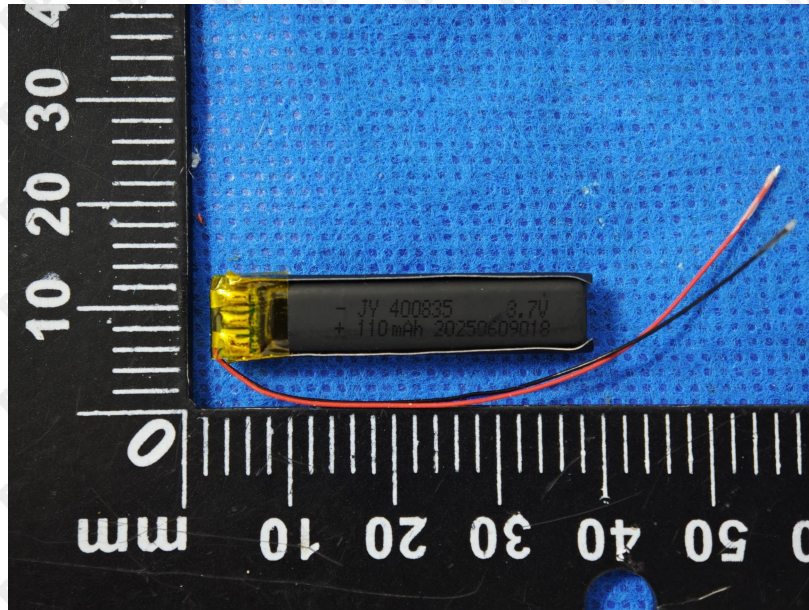
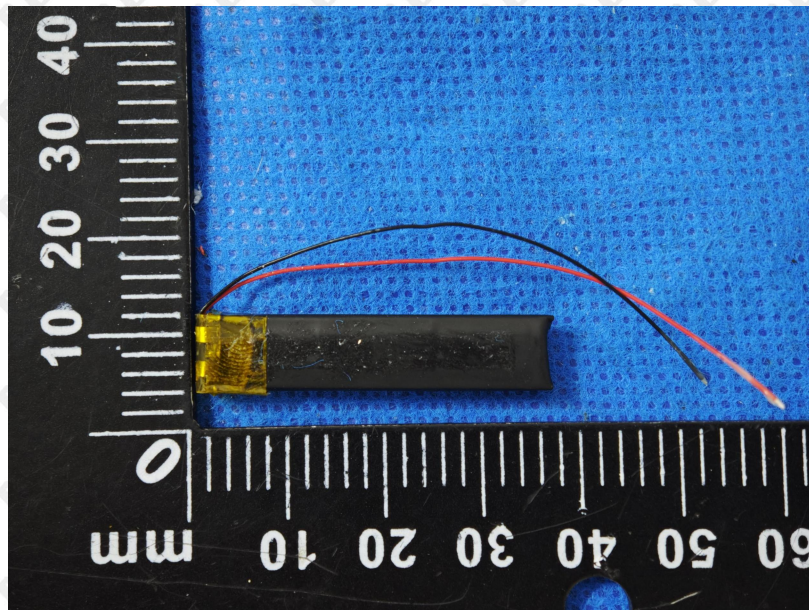
Photo 1Photo 2

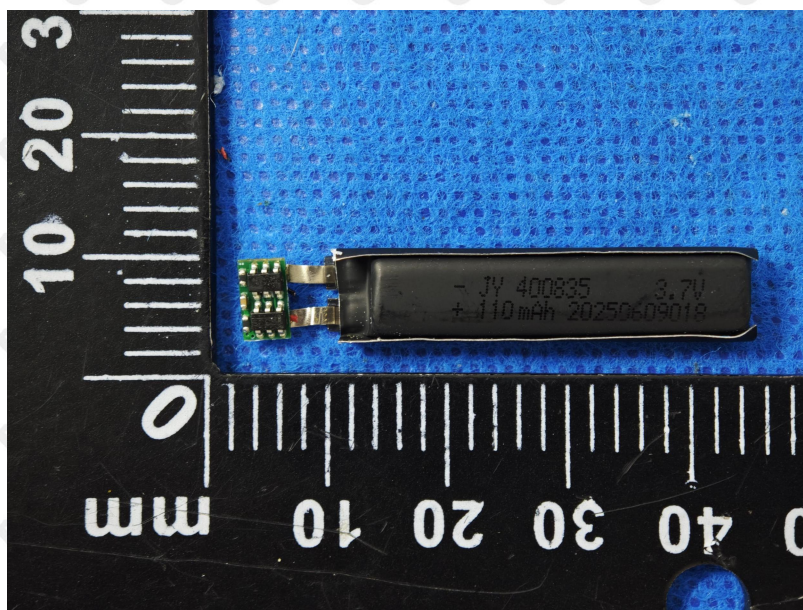
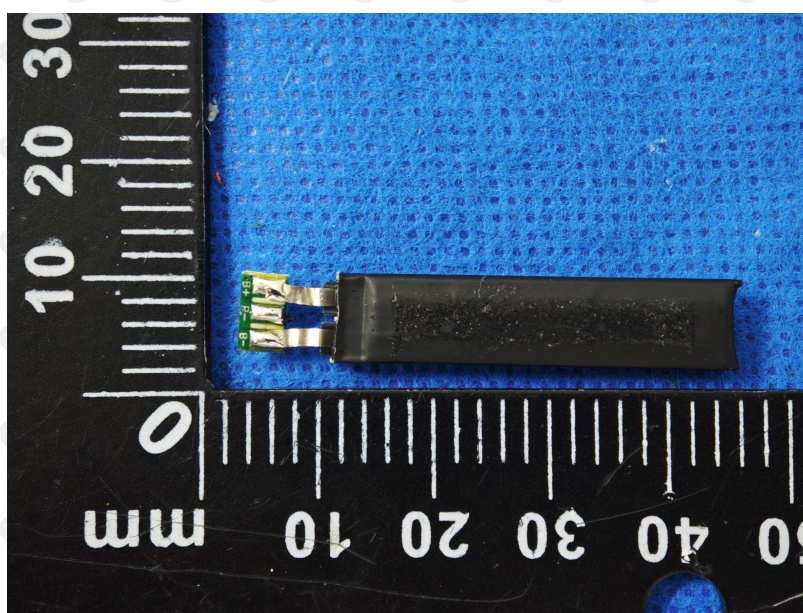
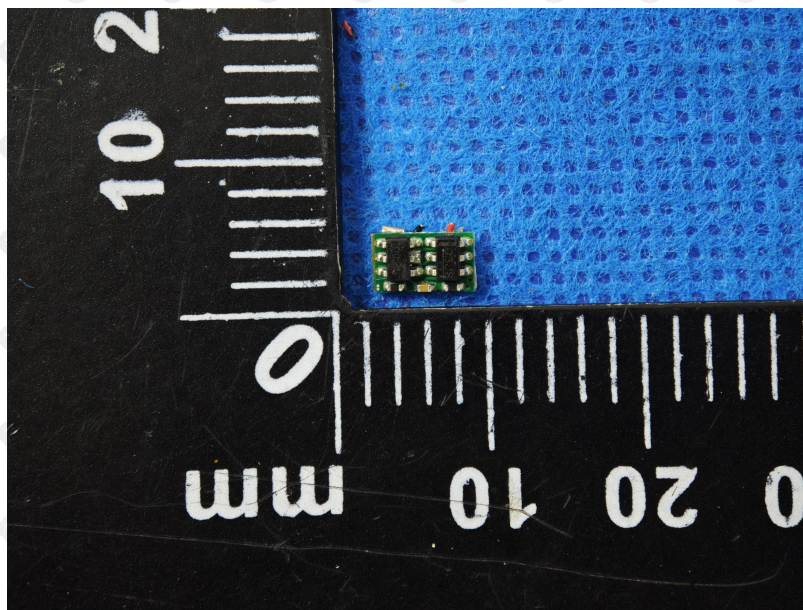
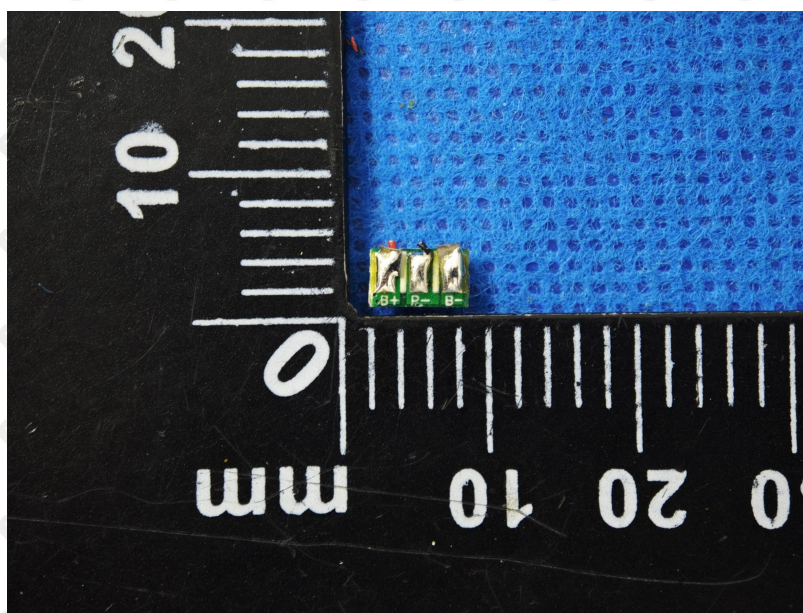
Photo 3**Photo 4**

Photo 5**Photo 6**

Important Notice

注意事项

1. The test report is invalid without the official stamp of CTB.

本报告书无CTB盖章无效。

2. The test report is invalid without the signatures of Ratifier, Reviewer and Testing engineer.

本报告书无批准人、审核人、及主检人签名无效。

3. Nobody is allowed to partly photocopy this test report without written permission of CTB.

未经CTB书面同意，不得部分地复制本报告书。

4. The report is invalid when anything of following happens – illegal transfer, reproduce, embezzlement, imposture, modification or tampering in any media form.

私自转让、复制、盗用、冒用、涂改、或以任何媒体形式篡改的报告书无效。

5. Product information and customer information provided by the applicant, we are not responsible for its authenticity.

产品信息和客户信息由申请人提供，我们不对其真实性负责。

6. The test report is valid for the tested samples only.

本报告仅对本次测试样品有效。

7. The Chinese contents in this report are only for reference.

本报告中的中文内容仅供参考。

8. Objections to the test report must be submitted to CTB within 15 days.

对报告书若有异议，应于收到报告之日起15天内向CTB提出。

报告结束