CMA 230009342837 ilac-MRA CNAS 中国认可 国际互认 检测 TESTING CNAS L2999

UN 38.3

检 测 报 告

Test Report

■新申请 □变更 □其他：
New Application Modification Other:

报告编号: 20240706J21367
Report ID

样品名称: 锂蓄电池组
Sample Name Rechargeable Li-ion Battery

型号规格: EBT480-147SGDJX
Model/Type 46.8V 14.7Ah 687Wh

委托单位: 星久科能源（苏州）有限公司
Applicant JOYCUBE BATTERY CO., LTD.

CQC 中认英泰检测技术有限公司 检测专用章
CQC Intime Testing Technology Co., Ltd.

检测报告 TEST REPORT			
报告编号： Report ID	20240706J21367		
样品名称： Sample Name	锂蓄电池组 Rechargeable Li-ion Battery	商　标： Trade Mark	JOYCUBE
型号规格： Model/Type	EBT480-147SGDJX 46.8V 14.7Ah 687Wh	样品状态： Sample status	完好 Good
委托单位： Applicant	星久科能源（苏州）有限公司 JOYCUBE BATTERY CO., LTD.		
地址： Applicant Address	苏州市高新区金沙江路181号 No.181, Jinshajiang Road, New District, Suzhou 215153, P.R. China		
生产单位： Manufacturer	星久科能源（苏州）有限公司 JOYCUBE BATTERY CO., LTD.		
地址： Manufacturer Address	苏州市高新区金沙江路181号 No.181, Jinshajiang Road, New District, Suzhou 215153, P.R. China		
试验单位： Test Lab	中认英泰检测技术有限公司 CQC Intime Testing Technology Co., Ltd		
地址： Lab Address	苏州市吴中经济开发区吴中大道1368号 No.1368, Wuzhong Road, Wuzhong Economic Development Zone 215104, Suzhou, Jiangsu, China		
试验标准： Standard Specification	联合国《试验和标准手册》第八版第38.3节 UN "Manual of Tests and Criteria", ST/SG/AC.10/11/Rev.8/Section 38.3		
试验项目： Test Item	高度模拟；温度试验；振动；冲击；外部短路；撞击；过度充电；强制放电 Altitude Simulation, Thermal Test, Vibration, Shock, External Short Circuit, Impact, Overcharge，Force Discharge		
接样日期：2024-07-23 Receiving Date		完成时间：2024-08-15 Completing Date	
试验结论： Conclusion	所检样品符合上述标准要求 The Submitted Sample(s) Meet the Requirement of the Standard.		
检测环境： Test Condition	环境温度：20℃±5℃ Ambient temperature		
项目： Engineer	仲超 仲超		
审核： Auditor	王利通		
签发： Approver	侯逢文 侯逢文		

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签发日期：
Data of issue
2024-09-27

试验样品描述
Description of the sample

测试项目 Test Item	样品编号 Sample No.	样品状态 Sample State
T1~T5	B1~ B4	第1个充放电循环，完全充电状态 At first cycle, in fully charged states
	B5~ B8	第25个充放电循环后，完全充电状态 After 25 cycles ending in fully charged states
T6	C1~C5	第1个充放电循环，50%设计额定容量状态 At first cycle at 50% of the design rated capacity
	C6~C10	第25个充放电循环后，50%设计额定容量状态 After 25 cycles ending at 50% of the design rated capacity
T7	B9~ B12	第1个充放电循环，完全充电状态 At first cycle, in fully charged states
	B13~ B16	第25个充放电循环后，完全充电状态 After 25 cycles ending in fully charged states
T8	C11~C20	第1个充放电循环，完全放电状态 At first cycle, in fully discharged states
	C21~C30	第25个充放电循环后，完全放电状态 After 25 cycles ending in fully discharged states

备注
Remarks

1，该样品为小型电池组
This sample is small battery

2，本次申请的产品有3种不同的外观样式，详见照片。其他包括结构、电芯、电气连接、电气参数均相同，不影响安全性能，无需进行差异测试。
The products applied for this time have three different appearance styles,see the photograph in detail. The other elements are the same, including structure, cells, electrical connection and other electrical parameters. it does not affect the safety performance and no differential test is required.

样品基本信息 **Sample Fundamental Parameters**			
项目 Item	参数 Parameters	项目 Item	参数 Parameters
额定容量(Ah) Rated capacity(Ah)	14.7	标称电压(V) Nominal voltage(V)	46.8
额定瓦特一小时(Wh) Watt-hour rating(Wh)	687	充电限制电压 (V) Limited charge voltage(V)	54.3
充电电流(A) Charge current(A)	3	最大连续充电电流(A) Maximum continous charging current (A)	4
充电截止电流(A) End charge current(A)	0.2	放电电流(A) Discharge current(A)	15
放电终止电压(V) End of discharging voltage (V)	36.4	内含电池芯个数(个) Cell numbers(pcs)	39
最大放电电流 (A) Maximum discharge current(A)	21（5min）	电池芯型号 Model of cell	INR21700-50GB
电池芯容量(Ah) Capacity of cell(Ah)	4.9	电池芯排列方式 Permutation of cell	13S3P
电池芯形状 Shape of cell	■圆柱形 Φ≥18mm □圆柱形＜18mm CylindricalΦ≥18mm CylindricalΦ＜18mm □棱柱形 □袋装电池 □纽扣电池 Prismatic Pouch Cell Button Cell		

样品照片
Photos of Sample

样品图片 (Sample photograph) -1



样品图片 (Sample photograph) -2



样品照片
Photos of Sample

样品图片 (Sample photograph) -3



样品图片 (Sample photograph) -4

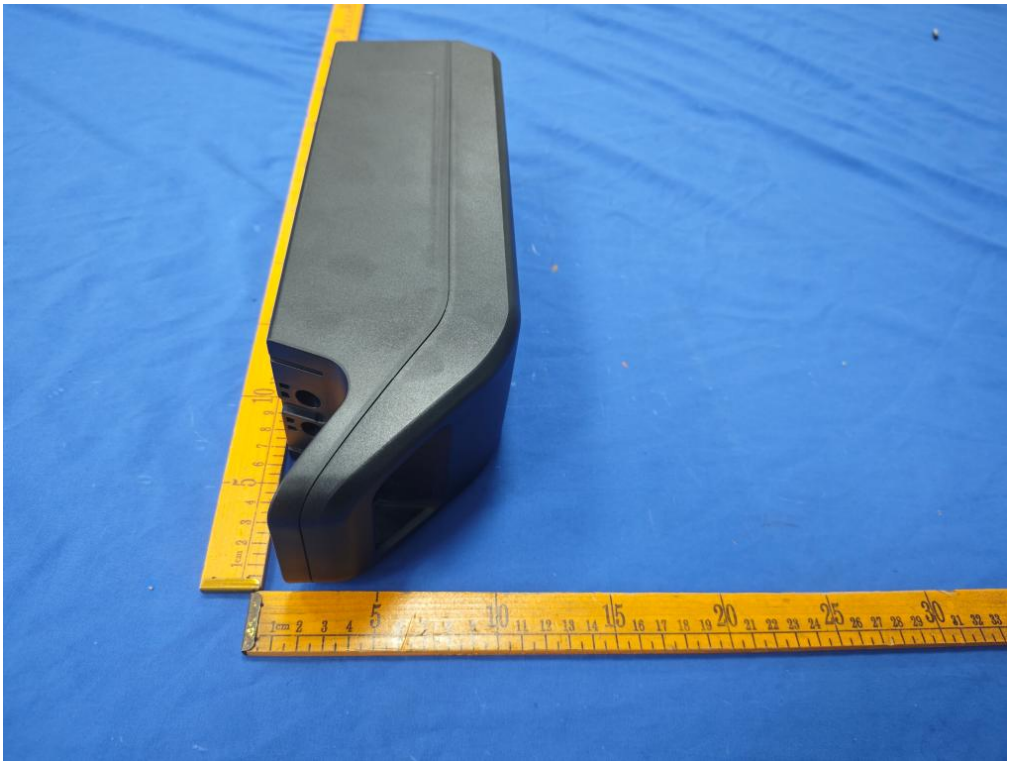


样品照片
Photos of Sample

样品图片 (Sample photograph) -5



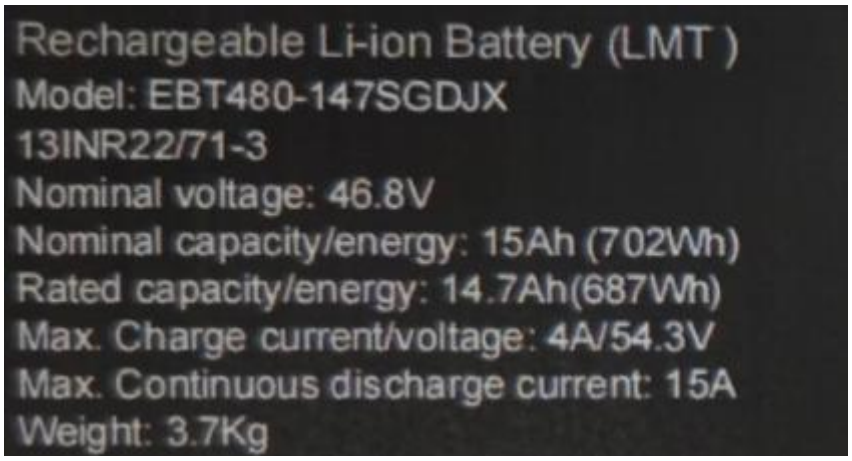
样品图片 (Sample photograph) -6



样品照片
Photos of Sample

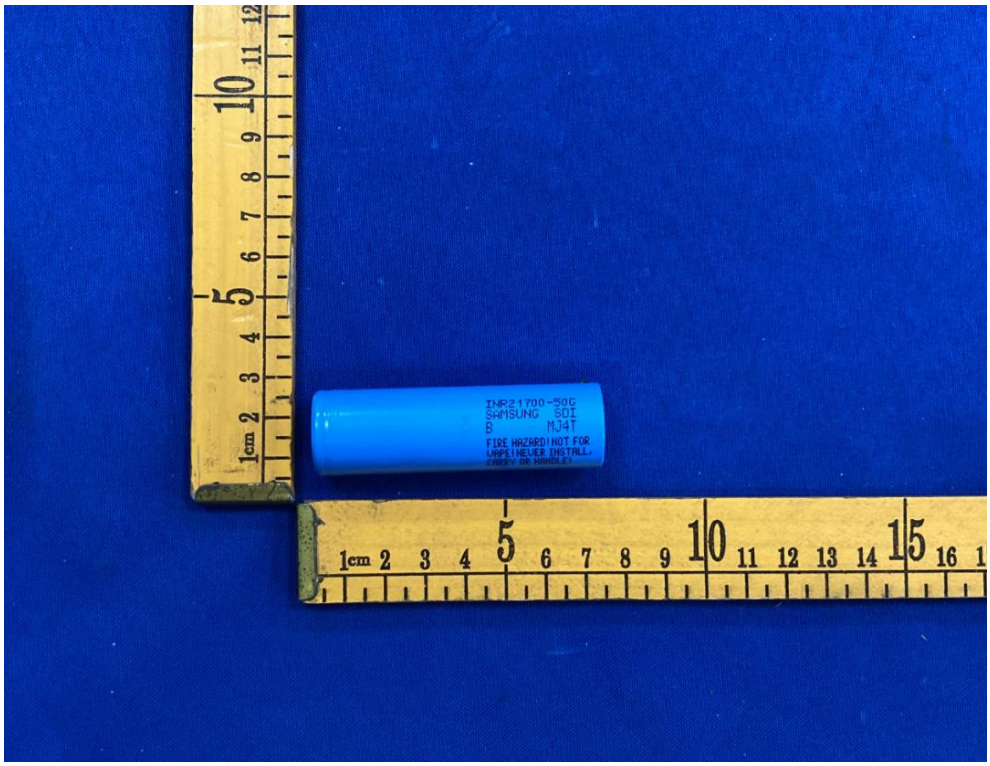
样品图片 (Sample photograph) -7





样品照片
Photos of Sample

样品图片 (Sample photograph) -8

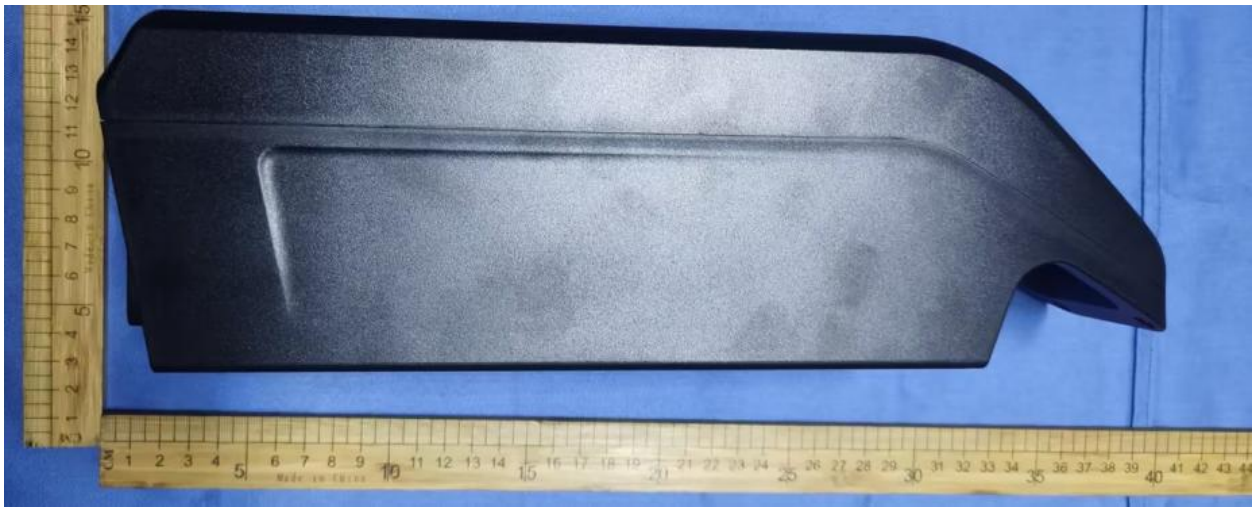


样品照片
Photos of Sample

不同的外观样式 (Different appearance styles)







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条款 Clause	**38.3.4.1高度模拟试验** **38.3.4.1 Altitude simulation**
测试步骤 Test Procedure	试验电池和电池组应在压力等于或低于11.6千帕和环境温度(20±5℃)下存放至少6小时。 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℃).
技术要求 Test requirement	不漏液、不泄放、不解体、不破裂、不着火(测试完电池的开路电压不小于测试前电压的90%，质量损失限值0.1%) No leakage, no venting, no disassembly, no rupture and no fire. 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. Mass loss limit 0.1%.
检测结果 Test results	不漏液、不泄放、不解体、不破裂、不着火，具体数据详见附表1 No leakage, no venting, no disassembly, no rupture and no fire. Test data is shown in Annex 1.
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条款 Clause	**38.3.4.2温度试验** **38.3.4.2 Thermal test**
测试步骤 Test Procedure	试验电池和电池组应先在试验温度等于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.
技术要求 Test requirement	不漏液、不泄放、不解体、不破裂、不着火(测试完电池的开路电压不小于测试前电压的90%，质量损失限值0.1%) No leakage, no venting, no disassembly, no rupture and no fire. 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. Mass loss limit 0.1%.
检测结果 Test results	不漏液、不泄放、不解体、不破裂、不着火，具体数据详见附表2 No leakage, no venting, no disassembly, no rupture and no fire. Test data is shown in Annex 2.
结论 Pass/Fail Conclusion	P

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条款 Clause	**38.3.4.3 振动试验** **38.3.4.3 Vibration**
测试步骤 Test Procedure	电池和电池组紧固于振动机平台，但紧固程度不能造成电池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7Hz到200Hz，再回到7Hz，跨度为15分钟。 对电池和小型电池组：从7 Hz开始，保持1gn 的最大加速度，直到频率达到18 Hz。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8 gn (频率约为50 Hz)。将最大加速度保持在8 gn 直到频率增加到200 Hz。 对大型电池组：从7Hz开始，保持1 gn 的最大加速度，直到频率达到18Hz。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2 gn (频率约为25 Hz)。将最大加速度保持在2 gn 直到频率增加到200Hz。 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. For cells and small batteries: from 7 Hz a peak acceleration of 1 gn 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 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 7HZ 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 frecuency increaseditil a peak acceleration of 2 gn ocroxmmately 25 Hz). A peak acceleration of 2 gn is then maintained until the frequency is increased to 200Hz 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 teminal face.
技术要求 Test requirement	不漏液、不泄放、不解体、不破裂、不着火(测试完电池的开路电压不小于测试前电压的90%，质量损失限值0.1%) No leakage, no venting, no disassembly, no rupture and no fire. 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. Mass loss limit 0.1%.
检测结果 Test results	不漏液、不泄放、不解体、不破裂、不着火，具体数据详见附表3 No leakage, no venting, no disassembly, no rupture and no fire. Test data is shown in Annex 3.
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条款 Clause	**38.3.4.4 冲击试验** **38.3.4.4 Shock**
测试步骤 Test Procedure	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。 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。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。 小型电池组以峰值为 150gn（或与$\sqrt{(\frac{100850}{mass})}$ 中的较小值）的半正弦的加速度撞击，脉冲持续 6 毫秒，大型电池组须经受最大加速度 50gn（或与$\sqrt{(\frac{30000}{mass})}$ 中的较小值）和脉冲持续时间 11 毫秒的半正弦波冲击。 每个电池或电池组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。 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. Altematively, large cells may be subjected to a half-sine shock acceleration of 50 gn and pulse duration of 11 milliseconds. Small batteries shall be subjected to a half-sine shock of peak acceleration of 150 gn (or Acceleration(gn)= $\sqrt{(\frac{100850}{mass})}$, which is smaller) and pulse duration of 6 milliseconds. Large batteries shall be subjected to a half-sine of peak acceleration of 50 gn (or Acceleration(gn)= $\sqrt{(\frac{30000}{mass})}$, which is smaller) and pulse duration of 11 milliseconds. Each 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 battery for a total of 18 shocks.
技术要求 Test requirement	不漏液、不泄放、不解体、不破裂、不着火(测试完电池的开路电压不小于测试前电压的90%，质量损失限值0.1%) No leakage, no venting, no disassembly, no rupture and no fire. 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. Mass loss limit 0.1%.
检测结果 Test results	不漏液、不泄放、不解体、不破裂、不着火，具体数据详见附表4 No leakage, no venting, no disassembly, no rupture and no fire. Test data is shown in Annex 4.
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条款 Clause	**38.3.4.5 外部短路** **38.3.4.5 External short circuit**
测试步骤 Test Procedure	电池和电池组的外壳温度稳定在57±4℃后，在此温度下对电池进行外部短路，外电路的总阻值应小于0.1Ω，持续短路至样品外壳温度回落到57±4℃后至少再继续短路1 h；对于大型电池组，外壳温度降幅达试验中所观察的的最高温升幅的二分之一并保持低于该数值。电池电池组必须再观察6h结束试验。 The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches 57±4℃ 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℃. This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to 57±4℃. In the case of the large batteries, has decreased by half of the temperature increase observed during the test and remains below that value. The cell and battery must be observed for a further six hours for the test to be concluded.
技术要求 Test requirement	外壳温度不超过170℃，不解体、不破裂、不着火。 External temperature does not exceed 170℃. No disassembly, no rupture and no fire.
检测结果 Test results	外壳温度不超过170℃，不解体、不破裂、不着火，具体数据详见附表5 External temperature does not exceed 170℃. No disassembly, no rupture and no fire. Test data is shown in Annex 5.
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条款 Clause	**38.3.4.6 撞击/挤压** **38.3.4.6 Impact/Crush**
测试步骤 Test Procedure	■撞击（适用于直径不小于18.0毫米的圆柱形电池） Impact(applicable to cylindrical cells not less than 18.0 mm in diameter) 将样品电池置于平板上，将一直径为15.8mm±0.1mm的不锈钢棒横放在样品中心，一块9.1Kg±0.1Kg的重锤从61 ± 2.5 cm高度落到试样上。圆柱形电池受撞击时，其长轴应平行于平板并且垂直于放在受检电池中心的直径为 15.8mm的棒。每一试样只经受一次撞击，电池必须再观察6h结束试验。 The sample cell or component cell is to be placed on a flat smooth surface. A 15.8 mm ± 0.1mm diameter 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 on to the sample. 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. The battery must be observed for a further six hours for the test to be concluded.
	□挤压(适用于棱柱形、袋装、硬币/纽扣电池和直径小于18.0毫米的圆柱形电池) Crush (applicable to prismatic, pouch, coin/button cells and cylindrical cells less than 18.0 mm in diammeter 将试样电池放在两个平面之间挤压，挤压力度逐渐增大，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：(a)施加的力量达到13kN±0.78kN;(b)电池的电压下降至少100mV;(c)电池变形达到原始厚度的50%或以上。棱柱形和袋装电池应从最宽的一面施压。硬币/纽扣电池应从平坦表面施压。圆柱形电池应从与纵轴垂直的方向施压。每个试样电池只做一次挤压试验，电池必须再观察6h结束试验。 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 kN ± 0.78 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. 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 battery must be observed for a further six hours for the test to be concluded.
技术要求 Test requirement	外壳温度不超过170℃，不解体、不破裂、不着火。 External temperature does not exceed 170℃.. No disassembly, no rupture and no fire.
检测结果 Test results	外壳温度不超过170℃，不解体、不破裂、不着火，具体数据详见附表6 External temperature does not exceed 170℃. No disassembly, no rupture and no fire. Test data is shown in Annex 6.
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条款 Clause	**38.3.4.7 过度充电** **38.3.4.7 Overcharge**
测试步骤 Test Procedure	充电电流必须是制造商推荐的最大持续充电电流的两倍。试验的最小电压应为如下：（a）当制造商推荐的充电电压不超过18 V时，试验的最小电压应为2倍于电池的最大充电电压或为22 V二者中较小者；（b）当制造商推荐的充电电压超过18 V时，试验的最小电压应为最大充电电压的1.2倍。该试验应在环境温度下进行。进行试验的时间应为24 小时。在过充电结束后观察被检电池7天。 The charge current shall be the twice the manufactures recommended maximum continuous charge current. The minimum voltage of the test shall be follows:(a)When the manufactures 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 manufactures 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. The test sample shall be observed for a further 7 days.
技术要求 Test requirement	不解体、不着火。 No disassembly, no fire.
检测结果 Test results	不解体、不着火,具体数据详见附表7 No disassembly, no fire. Test data is shown in Annex 7.
结论 Pass/Fail Conclusion	P

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检测结果
Test results

条款 Clause	**38.3.4.8 强制放电** **38.3.4.8 Forced discharge**
测试步骤 Test Procedure	电池在环境温度下与12V 直流电源串联连接，以电池制造商规定的最大持续放电电流作为初始电流强制放电。 将一个大小和功率合适的电阻负载与被检电池以及直流电源串联以获得规定的放电电流。每个电池强制放电的时间应等于其额定容量除以起始试验电流。在强制放电结束后观察被检电池7 天。 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). The test sample shall be observed for a further 7 days.
技术要求 Test requirement	不解体、不着火。 No disassembly, no fire.
检测结果 Test results	不解体、不着火,具体数据详见附表8 No disassembly, no fire. Test data is shown in Annex 8.
结论 Pass/Fail Conclusion	P

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附表1 高度模拟试验
Annex 1. Altitude Simulation

样品编号 Sample No.	试验前 Before test OCV_1 (V)	试验前 Before test M_1（g）	试验后 After test OCV_2 (V)	试验后 After test M_2（g）	OCV_2/OCV_1 (%)	质量损失 Mass Loss (%)	备注 Remarks
B1	54.25	3686.0	54.22	3685.5	99.94%	0.014%	-
B2	54.27	3684.5	54.21	3684.0	99.89%	0.014%	-
B3	54.26	3687.5	54.21	3687.0	99.91%	0.014%	-
B4	54.28	3687.0	54.23	3687.0	99.91%	0.000%	-
B5	54.24	3684.5	54.19	3683.5	99.91%	0.027%	-
B6	54.25	3688.5	54.19	3687.0	99.89%	0.041%	-
B7	54.24	3686.5	54.18	3686.0	99.89%	0.014%	-
B8	54.26	3689.0	54.20	3688.5	99.89%	0.014%	-
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附表2温度试验
Annex 2. Thermal test

样品编号 Sample No.	试验前 Before test OCV_1 (V)	试验前 Before test M_1（g）	试验后 After test OCV_2 (V)	试验后 After test M_2（g）	OCV_2/OCV_1 (%)	质量损失 Mass Loss (%)	备注 Remarks
B1	54.22	3685.5	54.11	3683.5	99.80%	0.054%	-
B2	54.21	3684.0	54.12	3682.5	99.83%	0.041%	-
B3	54.21	3687.0	54.07	3685.0	99.74%	0.054%	-
B4	54.23	3687.0	54.09	3685.0	99.74%	0.054%	-
B5	54.19	3683.5	54.11	3681.0	99.85%	0.068%	-
B6	54.19	3687.0	54.07	3685.5	99.78%	0.041%	-
B7	54.18	3686.0	54.09	3683.5	99.83%	0.068%	-
B8	54.20	3688.5	54.12	3686.0	99.85%	0.068%	-
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附表3振动试验
Annex 3. Vibration

样品编号 Sample No.	试验前 Before test OCV_1 (V)	试验前 Before test M_1（g）	试验后 After test OCV_2 (V)	试验后 After test M_2（g）	OCV_2/OCV_1 (%)	质量损失 Mass Loss (%)	备注 Remarks
B1	54.11	3683.5	54.08	3683.0	99.94%	0.014%	-
B2	54.12	3682.5	54.07	3682.5	99.91%	0.000%	-
B3	54.07	3685.0	54.05	3684.5	99.96%	0.014%	-
B4	54.09	3685.0	54.07	3684.5	99.96%	0.014%	-
B5	54.11	3681.0	54.08	3681.0	99.94%	0.000%	-
B6	54.07	3685.5	54.04	3685.0	99.94%	0.014%	-
B7	54.09	3683.5	54.02	3683.0	99.87%	0.014%	-
B8	54.12	3686.0	54.08	3686.0	99.93%	0.000%	-
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附表4冲击试验
Annex 4.Shock

样品编号 Sample No.	试验前 Before test OCV_1 (V)	试验前 Before test M_1（g）	试验后 After test OCV_2 (V)	试验后 After test M_1（g）	OCV_2/OCV_1 (%)	质量损失 Mass Loss (%)	备注 Remarks
B1	54.08	3683.0	54.06	3683.0	99.96%	0.000%	-
B2	54.07	3682.5	54.06	3682.0	99.98%	0.014%	-
B3	54.05	3684.5	54.05	3684.5	100.00%	0.000%	-
B4	54.07	3684.5	54.06	3684.0	99.98%	0.014%	-
B5	54.08	3681.0	54.08	3681.0	100.00%	0.000%	-
B6	54.04	3685.0	54.03	3685.0	99.98%	0.000%	-
B7	54.02	3683.0	54.02	3683.0	100.00%	0.000%	-
B8	54.08	3686.0	54.08	3686.0	100.00%	0.000%	-
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附表5外部短路试验
Annex 5. External short circuit

样品编号 Sample No.	试验前电压 Voltage before test (V)	初始温度 Initial Temperature (℃)	最高温度 Max Temperature (℃)	备注 Remarks
B1	54.06	56.1	56.5	-
B2	54.06	56.1	56.4	-
B3	54.05	56.2	56.3	-
B4	54.06	56.1	56.2	-
B5	54.08	56.2	56.3	-
B6	54.03	56.1	56.3	-
B7	54.02	56.2	56.3	-
B8	54.08	56.2	56.3	-
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附表6撞击/挤压试验
Annex 6. Impact/Crush

样品编号 Sample No.	试验前电压 Voltage before test (V)	初始温度 Initial Temperature (℃)	最高温度 Max Temperature (℃)	备注 Remarks
C1	3.767	23.2	31.4	-
C2	3.763	23.1	30.7	-
C3	3.773	23.3	24.4	-
C4	3.766	23.4	32.5	-
C5	3.764	23.2	26.7	-
C6	3.765	23.2	24.1	-
C7	3.770	23.3	25.8	-
C8	3.769	23.1	29.6	-
C9	3.767	23.4	28.7	-
C10	3.766	23.3	30.3	-
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附表7过充电试验
Annex 7.Overcharge

样品编号 Sample No.	试验前电压 Voltage before test (V)	初始温度 Initial Temperature (℃)	最高温度 Max Temperature (℃)	备注 Remarks
B9	54.27	23.2	23.4	-
B10	54.26	23.3	23.3	-
B11	54.26	23.3	23.4	-
B12	54.27	23.2	23.5	-
B13	54.26	23.1	23.5	-
B14	54.25	23.2	23.5	-
B15	54.26	23.2	23.3	-
B16	54.26	23.1	23.3	-
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附表8强制放电试验
Annex 8. Forced discharge

样品编号 Sample No.	试验前电压 Voltage before test (V)	初始温度 Initial Temperature (℃)	最高温度 Max Temperature (℃)	备注 Remarks
C11	3.011	23.2	57.2	-
C12	3.015	23.3	59.3	-
C13	3.027	23.1	56.6	-
C14	3.030	23.3	57.2	-
C15	3.011	23.2	58.7	-
C16	3.014	23.0	61.1	-
C17	3.015	23.1	57.1	-
C18	3.011	23.3	56.3	-
C19	3.020	23.2	60.7	-
C20	3.025	23.1	58.7	-
C21	3.017	23.2	57.6	-
C22	3.011	23.0	58.1	-
C23	3.011	23.2	59.7	-
C24	3.019	23.1	57.3	-
C25	3.021	23.2	58.6	-
C26	3.014	23.4	55.9	-
C27	3.017	23.4	56.0	-
C28	3.022	23.1	61.4	-
C29	3.023	23.5	58.5	-
C30	3.017	23.3	60.1	-
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——报告结束 End——

声明
Statement

1. 本报告无检测单位检测专用章无效。
   The report is invalid without the special test seal of the test department.
2. 对本报告的任何变更、修改或未经本机构书面批准的部分复制均属无效。不得不合理、不合法使用报告。
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3. 检测结果仅对所检样品有效。
   The test report is only responsible for the tested sample.
4. 送检样品的代表性和真实性由委托单位负责。
   The representativeness and authenticity of the samples submitted for testing shall be the responsibility of the client.
5. 若报告不加盖 CMA 标识时，仅作为科研、教学或内部质量控制之用。
   The test results given in this test report should only be used for purposes of scientific research, teaching and internal quality control when the CMA mark is not presented.
6. 对检测结果有异议者，请于收到报告之后十日内向本机构提出书面申诉。
   Objections to the test result shall be submitted to the laboratory in written form within 10 days after receiving the report.

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