Test Report

UN38.3

On Behalf of

Shandong Senter Electronic Co., Ltd.

山东信通电子股份有限公司

Li-ion Battery

锂离子电池

ST565213

Prepared for :	**Shandong Senter Electronic Co., Ltd.**	
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World Standardization Certification & Testing (Shenzhen) Co., Ltd. 深圳市世标检测有限公司 WSCT 检验专用章 (1)

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World Standardization Certification & Testing Co.,Ltd WSCT

Test Report

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Approved by (+ signature)..... 批准(签名)	王凤兵	
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Standard ..... 标准	Section 38.3 of Sixth revised edition of Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria (ST/SG/AC.10/11/Rev.6 Section 38.3) 《关于危险品货物运输的建议书试验和标准手册》第六修订版第38.3节	

Test conclusion 检验结论：

The Li-ion Batteries submitted by Shandong Senter Electronic Co., Ltd. are tested according to Section 38.3 of Sixth revised edition of Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria (ST/SG/AC.10/11/Rev.6 Section 38.3).

由山东信通电子股份有限公司送检的锂离子电池，依据《关于危险品货物运输的建议书试验和标准手册》第六修订版第38.3节进行检测。

Test result: Pass

检验结果：通过

Basic information description: **基本信息描述：**	
Name of sample ..... 样品名称	Li-ion Battery 锂离子电池
Model..... 型号	ST565213
Ratings ..... 额定值	7.4V,2000mAh,14.8Wh
Trade mark ..... 商标	--
Maximum charge voltage ..... 最大充电电压	8.4V
Discharge cut-off voltage..... 放电截止电压	6V
Max. continuous charge current..... 最大连续充电电流	电池：1500mA 电芯：1500mA
Max. continuous discharge current... 最大连续放电电流	电池：1500mA 电芯：1500mA
Dimension ..... 尺寸	电池： 56.68mm*53.47mm*13.38mm (L*W*T) 电芯：54.03 mm*53.01mm*6.38mm (L*W*T)
Shapen of cell ..... 电芯形状	Prismatic 棱柱形
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

Ⅰ、CONCLUSION 结论

ITEM项目	SAMPLE NUMBER样品号	STANDARD标准	CONCLUSION结论
Altitude simulation 高空模拟	B1-B8	Section 38.3 of Sixth revised edition of Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria (ST/SG/AC.10/11/Rev.6 Section 38.3) 《关于危险品货物运输的建议书试验和标准手册》第六修订版第38.3节	P
Thermal test 热测试			P
Vibration 振动			P
Shock 冲击			P
External short circuit 外部短路			P
Crush 挤压	C1-C5		P
Overcharge 过度充电	B9-B16		P
Forced discharge 强制放电	C6-C25		P

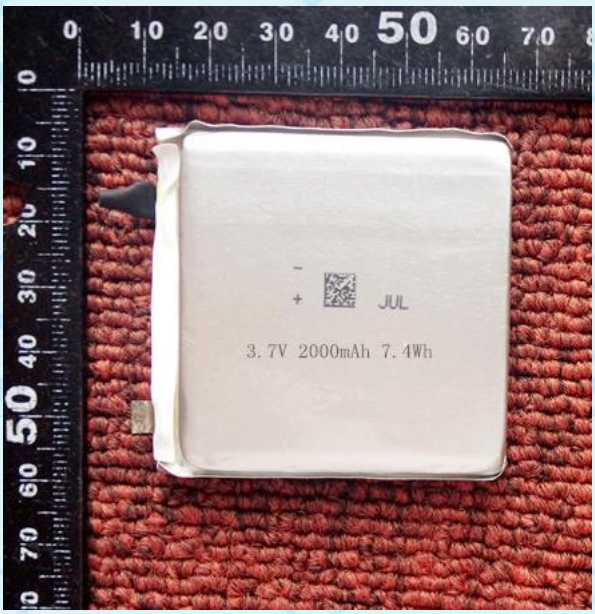
Notes备注:

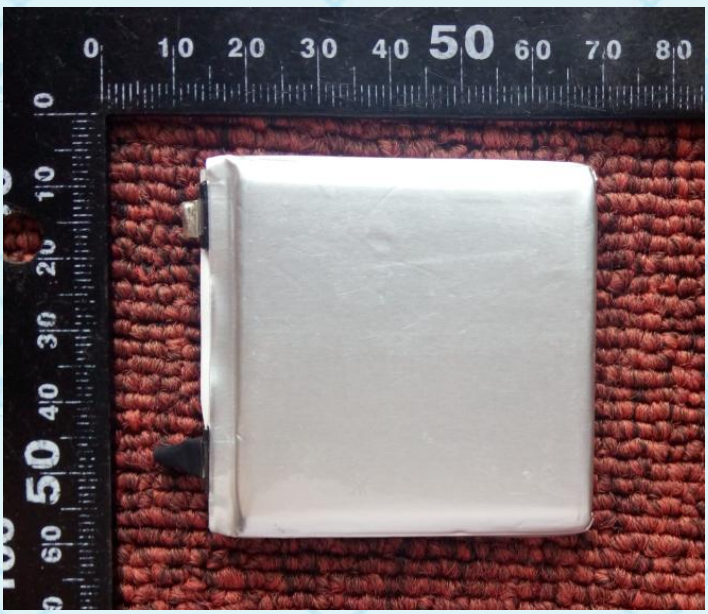
ITEM项目	SAMPLE NUMBER样品号	STATE状态
T.1-T.5	B1-B4	at first cycle, in fully charged state 第一个交替充电放电周期完全充电状态
	B5-B8	after fifty cycles ending in fully charged state 第五十个交替充电放电周期完全充电状态
T.6	C1-C5	at first cycle at 50% of the design rated capacity 第一个交替充电放电周期充电到设计额定容量的50%
T.7	B9-B12	at first cycle, in fully charged state 第一个交替充电放电周期完全充电状态
	B13-B16	after fifty cycles ending in fully charged state 第五十个交替充电放电周期完全充电状态
T.8	C6-C15	at first cycle, in fully discharged state 第一个交替充电放电周期完全放电状态
	C16-C25	after fifty cycles ending in fully discharged state 第五十个交替充电放电周期完全放电状态

Ⅱ、THE PHOTO OF SAMPLE 样品图片

Battery 电池

Cell 电芯





III、MAIN TEST EQUIPMENT 主要测试设备

NO.编号	Instrument Name 仪器名称
WSCTBS-011 WSCTBS-030 WSCTBS-031	Charge and discharge tester 充放电测试仪
WSCTBS-009	CTS 20V10A Charge and discharge tester CTS 20V10A 充放电测试仪
WSCTBS-010	CDS 120V100A Charge and discharge tester CDS 120V100A 充放电测试仪
WSCTBS-006	Altitude simulation low pressure testing chamber 模拟高空低压试验箱
WSCTBS-004	Temperature cycling testing chamber 温度循环试验箱
WSCTBS-008	Electrical vibration testing system 电动振动试验系统
WSCTBS-017	Drop style shock testing machine 跌落式冲击台
WSCTBS-003	Temperature control type battery short circuit testing machine 温控型电池短路试验机
WSCTBS-001	Power battery crush testing machine 动力电池挤压试验机
WSCTBS-005	Battery heavy impact testing machine 电池重物撞击试验机
WSCTBS-015 WSCTBS-016	Programmable DC power supply 可程控直流电源
WSCTR-004	Scales 天平
WSCTBS-021	Steel ruler 钢直尺
WSCTBS-022	Digital caliper 数显卡尺
WSCTBS-020 WSCTCL-022 WSCTCL-023	Indoor digital temperature and humidity meter 室内数字温湿度计
WSCTBS-014	Digital multimeter 数字多用表
WSCTS-117	Thermocouple 热电偶

Ⅳ、TEST METHOD AND RESULT 测试方法和结果

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.

小型电芯或电池必须按顺序进行试验T1至T5。试验T6至T8应使用未另外试验过的电芯或电池。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进行，以便测试交替充电放电的电池。

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

$$Mass\ loss(\%) = (M_1 - M_2)/M_1 \times 100$$

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

质量损失量化数值可用下式计算：

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

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”。

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

Test T.1: Altitude simulation 高空模拟

Test procedure 试验程序：

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 ℃).

试验电芯和电池在压力不大于11.6kPa和环境温度（20℃±5℃）下存放至少6小时。

Requirement 要求：

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.

如果无漏液、无排气、无解体、无破裂和无着火，且每个试验电芯或电池在试验后的开路电压不低于其在进行这项试验前开路电压的90％，电芯和电池即符合这一要求。有关电压的要求不适用于完全放完电状态的试验电芯和电池。

Result 结果：

The samples B1-B8: No leakage, no venting, no disassembly, no rupture and no fire. The data see table 1.

编号为B1-B8的样品：无漏液、无排气、无解体、无破裂和无着火现象，数据见表1。

Test T.2: Thermal test 热测试

Test procedure 测试程序：

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.

试验电芯和电池在试验温度等于72℃±2℃下存放至少6小时，接着在试验温度等于-40℃±2℃下存放至少6小时。

两个极端温度之间的最大时间间隔为30分钟。这一过程须重复10次，接着将所有电池在环境温度20℃±5℃下存放24小时。对于大型电芯和电池，暴露于极端试验温度的时间至少应为12小时。

Requirement 要求：

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.

如果无漏液、无排气、无解体、无破裂和无着火，且每个试验电芯或电池在试验后的开路电压不低于其在进行这项试验前开路电压的90％，电芯和电池即符合这一要求。有关电压的要求不适用于完全放完电状态的试验电芯和电池。

Result 结果：

The samples B1-B8: No leakage, no venting, no disassembly, no rupture and no fire. The data see table 2.

编号为B1-B8的样品：无漏液、无排气、无解体、无破裂和无着火现象，数据见表2。

Test T.3: Vibration 振动

Test procedure 测试程序：

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 12Kg (large batteries).

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

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

电芯和电池紧固于振动机平台，但不得造成电芯变形，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个方向重复进行12次，总共为时3小时。

做对数频率扫描，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。

对大型电池：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。

Requirement 要求：

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.

如果试验中和试验后无渗漏、无排气、无解体、无破裂和无着火，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%，电芯和电池即符合本项要求。有关电压的要求不适用与完全放电状态的试验电芯和电池。

Result 结果：

The samples B1-B8: No leakage, no venting, no disassembly, no rupture and no fire. The data see table 3.

编号为B1-B8的样品：无漏液、无排气、无解体、无破裂和无着火现象，数据见表3。

Test T.4: Shock 冲击

Test procedure 测试程序:

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

Battery	Minimum peak acceleration	Pulse duration
Small batteries	150 g_n or result of formula Acceleration(g_n)= $\sqrt{\left(\frac{100850}{\text{mass}^*}\right)}$ whichever is smaller	6ms
Large batteries	50 g_n or result of formula Acceleration(g_n)= $\sqrt{\left(\frac{30000}{\text{mass}^*}\right)}$ whichever is smaller	11ms

* Mass is expressed in kilograms

Each cell or battery is 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.

试验电芯和电池用坚硬支架紧固在试验装置上，支架支撑着每个试验电池的所有安装面。

每个电芯须经受峰值加速度150g_n和脉冲持续时间6毫秒的半正弦波冲击。另外，大型电芯须经受峰值加速度50g_n和脉冲持续时间11毫秒的半正弦波冲击。

每个电池需经受半正弦波冲击的峰值加速度取决于电池的质量。小型电池的脉冲持续时间为6毫秒，大型电池为11毫秒。下面提供的公式用来计算适当的最小峰值加速度。

电池	最小峰值加速度	脉冲持续时间
小型电池	150 g_n 或公式的结果，取其较小值 加速度(g_n)= $\sqrt{\left(\frac{100850}{\text{质量}^*}\right)}$	6毫秒

大型电池	50 g_n或公式的结果，取其较小值 加速度(g_n)= $\sqrt{(\frac{30000}{质量^*})}$	11毫秒

* 质量以公斤为单位表示

每个电芯或电池须在三个互相垂直的电芯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 要求:

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.

如果无漏液、无排气、无解体、无破裂和无着火，且每个试验电芯或电池在试验后的开路电压不低于其在进行这项试验前开路电压的90％，电芯和电池即符合这一要求。有关电压的要求不适用于完全放完电状态的试验电芯和电池。

Result 结果：

The samples B1-B8: No leakage, no venting, no disassembly, no rupture and no fire. The data see table 4.

编号为B1-B8的样品：无漏液、无排气、无解体、无破裂和无着火现象，数据见表4。

Test T.5: External short circuit 外部短路

Test procedure 测试程序:

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 ℃.

试验电芯和电池在57±4℃的环境温度下，经受外电阻小于0.1欧姆的短路试验，短路时间持续到电芯或电池壳温度恢复到57±4℃后继续至少1小时。

Requirement 要求：

Cells and batteries meet this requirement if their external temperature does not exceed 170 ℃ and there is no disassembly, no rupture and no fire during the test and within six hours after the test.

如果电芯和电池外表面温度不超过170℃，6小时内无解体、无破裂和无着火，那么电芯和电池适合这要求。

Result 结果：

The samples B1-B8: No disassembly, no rupture and no fire. The data see table 5.

编号为B1-B8的样品：无解体、无破裂和无着火现象，数据见表5。

Test T.6: Impact/Crush 撞击/挤压

Test procedure 测试程序:

Impact (applicable to cylindrical cells not less than 18mm in diameter)

Note: Diameter here refers to the design parameter (for example the diameter of 18650 cells is 18.0mm)

This test sample cell or component cell is to be placed on a flat smooth surface. A 15.8 mm diameter bar is to be placed across the center of the sample. A 9.1 kg mass is to be dropped from a height of 61 ± 2.5cm onto 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 ± 0.1 mm diameter curved surface lying across the centre of the test sample. Each sample is to be subjected to only a single impact.

撞击（适用于直径不小于18毫米的圆柱形电池）

注：此处直径指设计参数（例如：18650电芯的直径为18毫米）

将试验样品用的电芯或元件电芯放在一个平坦光滑的平面上，将一直径为15.8毫米的横木横过电池中部放置后，将一质量为9.1千克的物体从61±2.5厘米的高度落向样品。

接受撞击的试样，纵轴应与平坦的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。每一个试样只经受一次撞击。

Crush (applicable to prismatic, pouch, coin/button cells and cylindrical cells less 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 kN ± 0.78 kN;

Example: The force shall be applied by a hydraulic ram with a 32 mm diameter piston until a pressure of 17MPa is reached on the hydraulic ram.

(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.

挤压（适用于棱柱形、袋装、硬币/ 纽扣电芯和直径小于18 毫米的圆柱形电芯）

将电芯或元件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：

(a)施加的力量达到13千牛± 0.78千牛；

例如：用一个活塞直径32mm的液压顶施力，直到液压顶的压力达到17兆帕。

(b)电芯的电压下降至少100毫伏；

(c)电芯变形达原始厚度的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。

每个试样电芯或元件电芯只做一次挤压试验。试样应继续观察6小时，试验应使用之前未做过其他试验的电芯或元件电芯进行。

Requirement 要求:

Cells and component cells meet this requirement if their external temperature does not exceed 170 ℃ and there is no disassembly and no fire during the test and within six hours after this test.

如果电芯或元件电芯外部最高温度应不过170℃，并且在试验过程中及试验结束后6个小时之内无解体和无着火，电芯和元件电芯即符合本项要求。

Result 结果：

The samples C1-C5: No disassembly and no fire. The data see table 6.

编号为C1-C5的样品：无解体和无着火现象，数据见表6。

Test T.7: Overcharge 过度充电

Test procedure 测试程序：

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2倍的厂家标定最大充电电压或者22V两者中的较小者

(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

20±5℃的环境温度下，试验持续24小时。

Requirement 要求：

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

试验样品在试验中和试验后7天内，应无解体和无着火现象发生。

Result 结果:

The samples B9-B16: No disassembly and no fire. The data see table 7.

编号为B9-B16的样品：无解体和无着火现象，数据见表7。

Test T.8: Forced discharge 强制放电

Test procedure 测试程序：

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).

在环境温度下，将电芯连接在12V的直流电源上进行强制放电，此直流电源提供给每个电芯初始电流为制造厂指定的最大放电电流。

指定的放电电流通过串联在测试电芯上的合适大小和功率的负载来获得，每个电芯的强制放电时间（小时）为额定容量除以初始电流（安培）。

Requirement 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.

试验样品在试验中和试验后7天内，应无解体和无着火现象发生。

Result 结果：

The samples C6-C25: No disassembly and no fire. The data see table 8.

编号为C6-C25的样品：无解体和无着火现象，数据见表8。

Ⅴ、TEST DATE 测试数据

Table 1: Altitude simulation / 表1：高空模拟							
No.编号	Pre-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)			
B1	85.826	8.350	85.819	8.346	0.008	0.05	P
B2	85.823	8.330	85.817	8.327	0.007	0.04	P
B3	86.316	8.360	86.311	8.356	0.006	0.05	P
B4	86.314	8.350	86.308	8.348	0.007	0.02	P
B5	85.894	8.340	85.889	8.337	0.006	0.04	P
B6	85.284	8.380	85.277	8.374	0.008	0.07	P
B7	86.214	8.360	86.208	8.356	0.007	0.05	P
B8	86.168	8.350	86.162	8.346	0.007	0.05	P

Table 2: Thermal test / 表2：热测试							
No.编号	Pre-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)			
B1	85.819	8.346	85.808	8.332	0.013	0.17	P
B2	85.817	8.327	85.805	8.314	0.014	0.16	P
B3	86.311	8.356	86.299	8.341	0.014	0.18	P
B4	86.308	8.348	86.298	8.336	0.012	0.14	P
B5	85.889	8.337	85.878	8.323	0.013	0.17	P
B6	85.277	8.374	85.265	8.363	0.014	0.13	P
B7	86.208	8.356	86.197	8.342	0.013	0.17	P
B8	86.162	8.346	86.151	8.333	0.013	0.16	P

Table 3: Vibration / 表3：振动							
No.编号	Pre-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)			
B1	85.808	8.332	85.801	8.329	0.008	0.04	P
B2	85.805	8.314	85.797	8.311	0.009	0.04	P
B3	86.299	8.341	86.291	8.338	0.009	0.04	P
B4	86.298	8.336	86.291	8.334	0.008	0.02	P
B5	85.878	8.323	85.872	8.321	0.007	0.02	P
B6	85.265	8.363	85.259	8.361	0.007	0.02	P
B7	86.197	8.342	86.191	8.339	0.007	0.04	P
B8	86.151	8.333	86.144	8.330	0.008	0.04	P

Table 4: Shock / 表4：冲击							
No.编号	Pre-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)			
B1	85.801	8.329	85.801	8.329	0.000	0.00	P
B2	85.797	8.311	85.797	8.311	0.000	0.00	P
B3	86.291	8.338	86.291	8.338	0.000	0.00	P
B4	86.291	8.334	86.291	8.334	0.000	0.00	P
B5	85.872	8.321	85.872	8.321	0.000	0.00	P
B6	85.259	8.361	85.259	8.361	0.000	0.00	P
B7	86.191	8.339	86.191	8.339	0.000	0.00	P
B8	86.144	8.330	86.144	8.330	0.000	0.00	P

Table 5: External short circuit / 表5：外部短路								
No.编号	B1	B2	B3	B4	B5	B6	B7	B8
Peak temperature 最高温度(℃)	57.0	57.1	57.0	57.2	57.1	57.1	57.2	57.0
Verdict 判定	P	P	P	P	P	P	P	P

Table 6: Crush / 表6：挤压					
No.编号	C1	C2	C3	C4	C5
Peak temperature 最高温度(℃)	27.2	27.1	27.1	27.2	27.0
Verdict 判定	P	P	P	P	P

Table 7：Overcharge / 表7：过度充电								
No.编号	B9	B10	B11	B12	B13	B14	B15	B16
Verdict 判定	P	P	P	P	P	P	P	P

Table 8：Forced discharge / 表8：强制放电										
No.编号	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15
Verdict 判定	P	P	P	P	P	P	P	P	P	P
No.编号	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25
Verdict 判定	P	P	P	P	P	P	P	P	P	P

*** End of report***