Report No. ATSU181008711

UN38.3 测试报告

UN38.3 Test Report

Sample name ： Li-ion Battery

样 品 名 称 ： 锂离子电池

Consignor ： DONG GUAN XINYITONG ELECTRONIC TECHNOLOGY CO.,LTD

委 托 单 位 ： 东莞市芯易通电子科技有限公司

东莞市全测电子科技有限公司
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Sample name .....: 样品名称	Li-ion Battery 锂离子电池
Trade Mark .....: 商标	N/A
Model/Type reference .....: 型号	501012
Ratings .....: 规格	3.7V,40mAh, 0.14Wh
Appearance .....: 外观颜色	Gold 金色
Dimension(mm) .....: 尺寸	5.0mm (max.)*10mm(max.)*10mm(max.)
Consignor .....: 委托单位	DONG GUAN XINYITONG ELECTRONIC TECHNOLOGY CO.,LTD 东莞市芯易通电子科技有限公司
Address .....: 地址	3/F, D Building, Xiaodong High-tech Industrial Park, No. 8 Hechang Road, Shatousha District, Chang 'an Town, Dongguan City, Guangdong Province, China. 东莞市长安镇沙头沙区合昌路8号晓东高新产业园D栋3楼
Factory .....: 生产单位	DONG GUAN XINYITONG ELECTRONIC TECHNOLOGY CO.,LTD 东莞市芯易通电子科技有限公司
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Test method and criterion .....: 测试方法和判定标准	UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1 Section 38.3 联合国《关于危险货物运输的建议书 试验和标准手册》ST/SG/AC.10/11/Rev.6/Amend.1 Section 38.3
Conclusion.....: 测试结论	The sample has passed the test items of UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1 Section 38.3 经测试，该样品符合联合国《关于危险货物运输的建议书试验和标准手册》ST/SG/AC.10/11/Rev.6/Amend.1 Section 38.3标准要求。
Issue date.....: 签发日期	2018.11.08

Tested by 测 试		Reviewed by 审 核		Approved by 批 准	

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

The sample's status is good.
样品状况良好。

Test item 测试项目	Sample No. 样品编号	State 状态	Remark 备注
T.1~T.5	c1#~c5#	At first cycle, in fully charged state 第一个交替充电放电周期完全充电状态	
	c6#~c10#	At twenty cycles ending in fully charged states 第二十五个交替充电放电周期完全充电状态	
T.6	c11#~c15#	At first cycle at 50% of the design rated capacity 第一个交替充电放电周期充电至标称容量的50%状态	
	c16#~c20#	At twenty five at 50% of the design rated capacity 第二十五个交替充电放电周期充电至标称容量的50%状态	
T.7	/	At first cycle, in fully charged state 第一个交替充电放电周期完全充电状态	
	/	At twenty five cycle, in fully charged state 第二十五个交替充电放电周期完全充电状态	
T.8	c21#~c30#	At first cycle, in fully discharged state 第一个交替充电放电周期完全放电状态	
	c31#~c40#	After twenty five cycles, end in fully discharged state 第二十五个交替充电放电周期完全放电状态	

Test case verdicts
测试判定

Test case does not apply to the test object ..... : 判定不适用于测试对象	N/A 不适用
Test item does meet the requirement..... : 测试符合规定	P 符合
Test item does not meet the requirement..... : 测试不符合规定	F 不符合

Testing 测试

Date of receipt of test item ..... : 接样日期	2018.10.17
Date(s) of performance of test ..... : 测试周期	2018.10.17 – 2018.11.01

General remarks 备注

All tests as described in Test Case and Measurement Sections were performed at the laboratory described on page 1.
所有测试项目均在第一页中测试单位实验室中进行。

This report shall not be reproduced in full, or extracted, without the written approval of the testing laboratory.
未经本实验室书面批准，不得部分复制、摘要本报告书内容。

The test results presented in this report relate only to the item tested.
本报告的测试结果仅对送检样品负责。

Throughout this report a point is used as the decimal separator.
本报告中以点代替小数点。

General product information:
产品信息:

The main features of this model are shown as below:
产品主要信息如下:

Model 型号	Nominal capacity 额定容量	Nominal voltage 额定电压	Nominal Charge Current 额定充电电流	Nominal Discharge Current 额定放电电流	Maximum Charge Current 最大充电电流	Maximum Discharge Current 最大放电电流	Maximum Charge Voltage 最大充电电压	Cut-off Voltage 放电截止电压
Cell/电芯								
501012	40mAh	3.7V	8mA	8mA	40mA	40mA	4.2V	2.8V

Test Procedure:
测试程序:

1. 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. 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.
测试T.1~T.5须按顺序依次在同一组电芯或电池上进行。T.6和T.8须用全新的电芯进行测试。T.7 用之前T.1~T.5测试中完整无损的电池进行测试。

2. In order to quantify the mass loss, the following procedure is provided:
质量损失按照如下公式计算:

$$\text{Mass loss (\%)} = \frac{(M_1 - M_2)}{M_1} \times 100$$

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 38.3.1, it shall be considered as “no mass loss”.
M_1是测试前的重量，M_2是测试后的重量。若质量损失不超过Table 38.3.1中的值即可视为“没有质量损失”。

Table 38.3.1 Mass loss limit

Mass M of cell or battery	Mass loss limit
M <1 g	0.5%
1 g ≤ M ≤ 75 g	0.2%
M > 75 g	0.1%

ST/SG/AC.10/11/Rev.6/Amend.1 Section 38.3			
Clause 章节	**Requirements 标准要求**	**Result 测试结果**	**Verdict 判定**
38.3.4.1	**Test 1: Altitude simulation / 测试1: 高度模拟**		**P**
	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) 试验电芯和电池在温度为20±5 °C、大气压力不大于11.6 kPa的环境中贮存至少6小时。		P
	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. 电芯和电池如无泄露、无排气、无解体、无破裂、无起火，并且试验后每个被测电芯或电池的开路电压不低于试验前的90%。则满足试验要求。对完全放电状态的被测电芯和电池不做电压要求。	No leakage, no venting, no disassembly, no rupture and no fire. 无泄露、无排气、无解体、无破裂、无起火现象。 The data see table 1. 测试数据见表1。	P
38.3.4.2	**Test 2: Thermal test / 测试2: 温度试验**		**P**
	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). 被测电芯和电池在试验温度72 ± 2 °C下储存至少6小时，然后放在试验温度- 40 ± 2 °C下储存至少6小时。极端试验温度最大时间间隔为30分钟。该过程重复直至十个完整循环结束。之后将所有被测电芯和电池在环境温度20 ± 5 °C下储存24小时。		P
	For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12 hours. 对大电芯和大电池，极端温度下储存时间至少为12小时。		N/A
	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. 电芯和电池如无泄露、无排气、无解体、无破裂、无起火，并且试验后每个被测电芯或电池的开路电压不低于试验前的90%。则满足试验要求。对完全放电状态的被测电芯和电池不做电压要求。	No leakage, no venting, no disassembly, no rupture and no fire. 无泄露、无排气、无解体、无破裂、无起火现象。 The data see table 1. 测试数据见表1。	P

ST/SG/AC.10/11/Rev.6/Amend.1 Section 38.3			
Clause 章节	**Requirements 标准要求**	**Result 测试结果**	**Verdict 判定**
38.3.4.3	**Test 3: Vibration / 测试3: 振动**		**P**
	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. 电芯和电池紧固在振动设备的平台上。不应使电芯或电池变形，并可如实传导振动。振动应用正弦波进行在7 Hz ~ 200 Hz之间进行对数扫频，15分钟内回到7 Hz。该循环应对电芯的三个互相垂直的面分别重复12次，各3小时。一个振动的方向应垂直于端子面。		P
	The logarithmic frequency sweep shall differ for cells and batteries with a gross mass of not more than 12 kg (cells and small batteries), and for batteries with a gross mass of more than 12 kg (large batteries). 对数扫频应对不超过12 kg的电芯和小电池以及超过12 kg的大电池有以下区别：		P
	For cells and small batteries: from 7Hz a peak acceleration of 1gn 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 8gn occurs (approximately 50Hz). A peak acceleration of 8gn is then maintained until the frequency is increased to 200Hz. 对电芯和小电池：从7Hz保持1gn的峰值加速度直至达到18Hz，保持振幅为0.8mm (总偏移1.6mm)，增加频率直至峰值加速度达到8gn (约为50Hz)，之后保持峰值加速度保持在8gn直至频率增加至200Hz。		P
	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 2gn is then maintained until the frequency is increased to 200 Hz. 对大电池：从7 Hz保持1 gn的峰值加速度直至达到18 Hz，保持振幅为0.8 mm (总偏移1.6 mm)，增加频率直至峰值加速度达到2 gn (频率约为25 Hz)，保持峰值加速度为2 gn，直至频率增加到200 Hz。		N/A

ST/SG/AC.10/11/Rev.6/Amend.1 Section 38.3			
Clause 章节	**Requirements 标准要求**	**Result 测试结果**	**Verdict 判定**
	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. 电芯和电池如试验期间和试验后无泄漏、排气、解体、破裂或起火，并且试验后（第三个垂直面测试后）每个被测电芯或电池的开路电压不低于试验前的90%。则满足试验要求，对完全放电状态的被测电芯和电池不做电压要求。	No leakage, no venting, no disassembly, no rupture and no fire. 无泄露、无排气、无解体、无破裂、无起火现象。 The data see table 1. 测试数据见表1。	P
38.3.4.4	**Test 4: Shock / 测试4: 冲击**		**P**
	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 or battery 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. 被测电芯和电池应通过坚固的方式紧固在试验设备上，可以支撑每个被测电池的所有面。每个电芯或电池应用峰值加速度150 gn、脉冲时间6 ms的半正弦波进行冲击。或者大电芯应用峰值加速度50 gn、脉冲时间11 ms的半正弦波进行冲击。		P

ST/SG/AC.10/11/Rev.6/Amend.1 Section 38.3			
Clause 章节	**Requirements 标准要求**	**Result 测试结果**	**Verdict 判定**
	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. 每个电池应用半正弦波冲击的峰值加速度大小取决于电池的质量。小电池应用6 ms的脉冲时间以及大电池应用11 ms的脉冲时间。根据下面的公式来计算合适的最小峰值加速度。	The sample are small batteries, peak acceleration=150gn, pulse duration=6ms. 样品为小电池，峰值加速度=150gn，脉冲时间=6ms。	P
	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. 每个电芯或电池应在三个垂直面的正向各承受三次冲击，负向再各承受3次冲击，共18次。		P
	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. 电芯和电池如无泄露、无排气、无解体、无破裂、无起火，并且试验后每个被测电芯或电池的开路电压不低于试验前的90%。则满足试验要求。对完全放电状态的被测电芯和电池不做电压要求。	No leakage, no venting, no disassembly, no rupture and no fire. 无泄露、无排气、无解体、无破裂、无起火现象。 The data see table 1. 测试数据见表1。	P
38.3.4.5	**Test 5: External short circuit / 测试5: 外部短路**		**P**

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

ST/SG/AC.10/11/Rev.6/Amend.1 Section 38.3			
Clause 章节	**Requirements 标准要求**	**Result 测试结果**	**Verdict 判定**
	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. 电芯或电池进行试验前必须加热一段时间至表面温度稳定在57 ± 4 °C。加热时间取决于电芯或电池的尺寸和设计,以及对其进行评估和记录。如果时间不可评估和记录，则小电芯或小电池加热时间不可低于6小时，大电芯和大电池不可低于12小时。然后电芯或电池在温度57 ± 4 °C时用小于0.1欧姆的总电阻回路进行短路，直到样品的外表温度恢复至57 ± 4 °C之后继续保持短路状态1小时以上，或者大电池表面最大温升值下降一半以上。短路和降温阶段至少应在环境温度下进行。		P
	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. 试验期间和试验后6小时内，如果电芯或电池的外壳温度不超过170 °C，并且无解体、破裂或起火，则满足试验要求。	No disassembly, no rupture and no fire. 无解体、无破裂、无起火现象。 The data see table 1. 测试数据见表1。	P
38.3.4.6	**Test 6: Impact/Crush / 测试6: 撞击/挤压**		**P**
	Test procedure – Impact (applicable to cylindrical cells not less than 18.0 mm in diameter) 撞击(适合于直径不小于18.0 mm的圆柱形电芯)	Pouch cell / 袋状电芯	N/A

ST/SG/AC.10/11/Rev.6/Amend.1 Section 38.3			
Clause 章节	**Requirements 标准要求**	**Result 测试结果**	**Verdict 判定**
	The test sample cell or component cell is to be placed on a flat smooth surface. A 15.8 mm ± 0.1 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 kg ± 0.1 kg mass is to be dropped from a height of 61 ± 2.5 cm at the intersection of the bar and sample in a controlled manner using a near 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. 将电芯或组成电芯试样放在平坦光滑的表面上。把一根直径为15.8 mm ± 0.1 mm的316型不锈钢棒横放在试样中心。钢棒的长度至少为6 cm，或电芯的最长尺寸，取两者中较大的值。将一块9.1 kg ± 0.1 kg重物从61 ± 2.5 cm的高度落在钢棒和试样的交叉处，使用一个几乎没有摩擦的、对下落重物阻力最小的垂直轨道或管道加以控制，垂直轨道或管道用来使下落中午同水平支撑面保持90度落下。		N/A
	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. 进行撞击试验的试样的纵轴应与水平面平行并与横放在试样中心的直径棒的弯曲表面的纵轴垂直。每个样品应只经受一次撞击。		N/A
	Test Procedure – Crush (applicable to prismatic, pouch, coin/button cells and cylindrical cells less than 18mm in diameter). 挤压 (适用于棱柱形、袋状、硬币/纽扣电芯和直径不超过18mm的圆柱形电芯)	Pouch cell / 袋状电芯	P
	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. 将电芯或组成电芯在两个平面间挤压，挤压在第一个接触点以约1.5 cm/s的速度进行，直到出现以下三种情况之一为止：		P
	(a) The applied force reaches 13 kN ± 0.78 kN; (a) 作用力达到13 kN ± 0.78 kN；		P
	(b) The voltage of the cell drops by at least 100 mV; (b) 电芯的电压下降至少达到100 mV；		N/A

ST/SG/AC.10/11/Rev.6/Amend.1 Section 38.3			
Clause 章节	**Requirements 标准要求**	**Result 测试结果**	**Verdict 判定**
	(c) The cell is deformed by 50% or more of its original thickness. (c) 电池厚度和最初比较，变形至少50%。		N/A
	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. 对棱柱形或袋状电芯，应仅对最宽面进行挤压；对纽扣/硬币形电芯，应对平面进行挤压；对圆柱形电芯，应在纵轴的垂直方向进行挤压。		P
	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. 每个测试电芯或组成电芯应只经受一次挤压。测试样品应继续观察6小时。试验用电芯或组成电芯之前应没进行过其他试验。		P
	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. 电芯或组成电芯如果外部温度不超过170 °C并且在试验中和试验后6小时内无解体或起火，则符合本试验要求。	No disassembly and no fire. 无解体，无起火现象发生。 The data see table 2. 测试数据见表2。	P
38.3.4.7	**Test 7: Overcharge / 测试7: 过充电**		**N/A**
	The charge current shall be twice the manufacturer's recommended maximum continuous charge current. Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours. The minimum voltage of the test shall be as follows: 在室温下，以2倍的制造商宣称的最大持续充电电流对样品充电，测试时间为24小时。测试的最小电压如下：		N/A
	(a) When the manufacturer's recommended charge voltage is not more than 18 V, the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the battery or 22 V. (a) 当生产商推荐的充电电压不大于18 V时，最小试验电压应为最大充电电压和22 V之间的较小值。		N/A
	(b) When the manufacturer's recommended charge voltage is more than 18 V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage. (b) 当生产商推荐的充电电压大于18 V时，最小试验电压应为最大充电电压的1.2倍。		N/A

ST/SG/AC.10/11/Rev.6/Amend.1 Section 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. 可充电的电池如试验期间和试验后7天内无解体或无起火，则满足要求。	No disassembly and no fire. 无解体和无起火现象发生。 The data see table 3. 测试数据见表3。	N/A
38.3.4.8	**Test 8: Forced discharge / 测试8: 强制放电**		**P**
	Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12 V D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer. 每个电芯应在环境温度下，通过串联至12 V的直流电源进行强制放电，初始电流为生产商规定的最大放电电流。 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). 规定的放电电流通过用合适尺寸和大小的负载和被测电芯串联在一起获得。每个电芯强制放电的时间（单位为小时）为其额定容量除以初始试验电流（单位为安培）。		P
	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. 不可充电的电芯或可充电的电池芯如果在试验期间和试验后7天内无解体或起火，则满足试验要求。	No disassembly and no fire. 无解体和无起火现象发生。 The data see table 4. 测试数据见表4。	P

Table 1: T.1~T.5 / 表1: 测试 1~测试 5											
Sample No. 样品编号	Mass prior to test (g) 试验前质量(g)	OCV prior to test (V) 试验前电压(V)	Test 1: Altitude simulation 测试 1: 高度模拟		Test 2: Thermal test 测试 2: 温度试验		Test 3: Vibration 测试 3: 振动		Test 4: Shock 测试 4: 冲击		Test 5: External Short Circuit 测试 5: 外部短路
			Mass loss(%) 质量损失(%)	Change ratio(%) 电压比(%)	Mass loss(%) 质量损失(%)	Change ratio(%) 电压比(%)	Mass loss(%) 质量损失(%)	Change ratio(%) 电压比(%)	Mass loss(%) 质量损失(%)	Change ratio(%) 电压比(%)	Temp. (°C) 温度(°C)
b1#	1.056	4.176	0.000	99.95	0.000	98.85	0.000	99.95	0.000	100.00	126.7
b2#	1.111	4.170	0.000	99.98	0.000	98.82	0.000	99.95	0.000	99.98	120.5
b3#	1.111	4.176	0.000	99.98	0.000	98.80	0.000	99.98	0.000	99.98	121.4
b4#	1.117	4.174	0.000	99.98	0.000	98.56	0.000	99.98	0.000	100.00	130.0
b5#	1.059	4.176	0.000	99.98	0.000	99.04	0.000	99.95	0.000	99.98	119.6
b6#	1.098	4.176	0.000	99.95	0.000	99.16	0.000	99.98	0.000	100.00	125.8
b7#	1.033	4.171	0.000	99.98	0.000	98.49	0.000	99.95	0.000	100.00	123.3
b8#	1.059	4.173	0.000	99.95	0.000	98.78	0.000	99.95	0.000	100.00	124.1
b9#	1.098	4.172	0.000	99.98	0.000	98.47	0.000	99.95	0.000	99.98	118.5
b10#	1.104	4.175	0.000	99.98	0.000	98.92	0.000	99.95	0.000	99.98	127..6

Table 2: Crush / 表2: 挤压											
Test 6: Crush 测试6: 挤压	Sample No. 样品编号	c1#	c2#	c3#	c4#	c5#	c6#	c7#	c8#	c9#	c10#
	OCV prior to test (V) 试验前电压(V)	3.906	3.904	3.917	3.907	3.900	3.914	3.913	3.915	3.902	3.900
	Temp. (°C) 温度(°C)	49.8	65.5	60.8	55.1	56.0	58.1	55.7	66.5	63.2	55.0

Table 3: Overcharge / 表3: 过充电									
Test 7: Overcharge 测试7: 过充电	Sample No. 样品编号	--	--	--	--	--	--	--	--
	OCV prior to test (V) 试验前电压(V)	--	--	--	--	--	--	--	--

Table 4: Forced discharge / 表4: 强制放电											
Test 8: Forced discharge 测试8: 强制放电	Sample No. 样品编号	c11#	c12#	c13#	c14#	c15#	c16#	c17#	c18#	c19#	c20#
	OCV prior to test (V) 试验前电压(V)	3.143	3.147	3.143	3.151	3.157	3.146	3.150	3.162	3.153	3.144
	Sample No. 样品编号	c21#	c22#	c23#	c24#	c25#	c26#	c27#	c28#	c29#	c30#
	OCV prior to test (V) 试验前电压(V)	3.159	3.158	3.164	3.156	3.146	3.156	3.149	3.170	3.154	3.140

Photos of Samples (样品照片)

Li-ion Cell / 锂离子电池 (3.7V,40mAh, 0.14Wh)

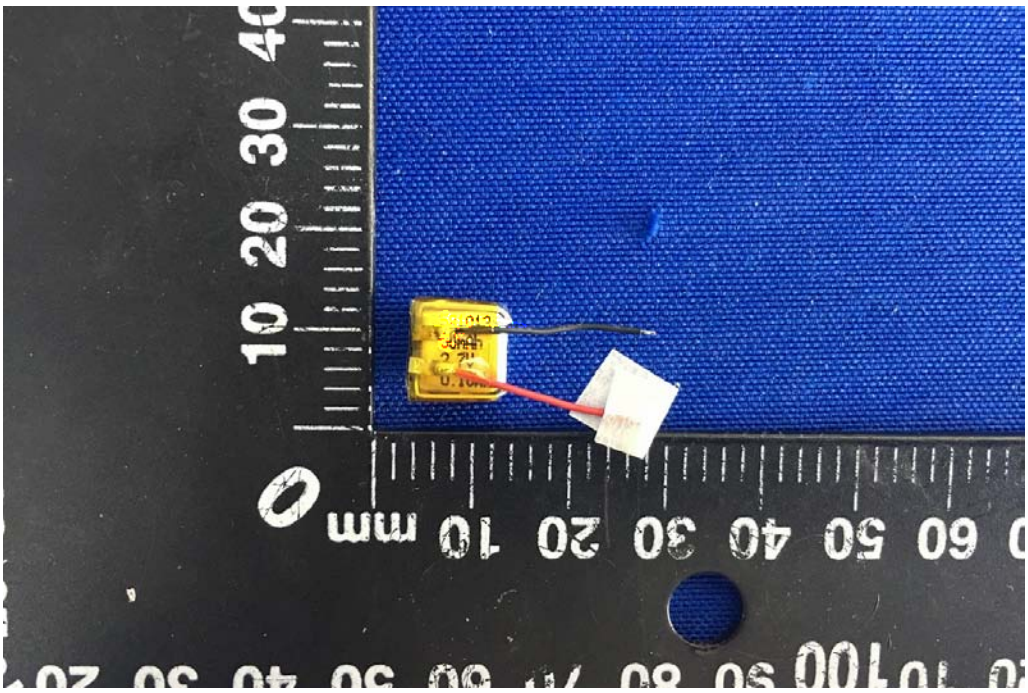


Figure 1 Front view of cell

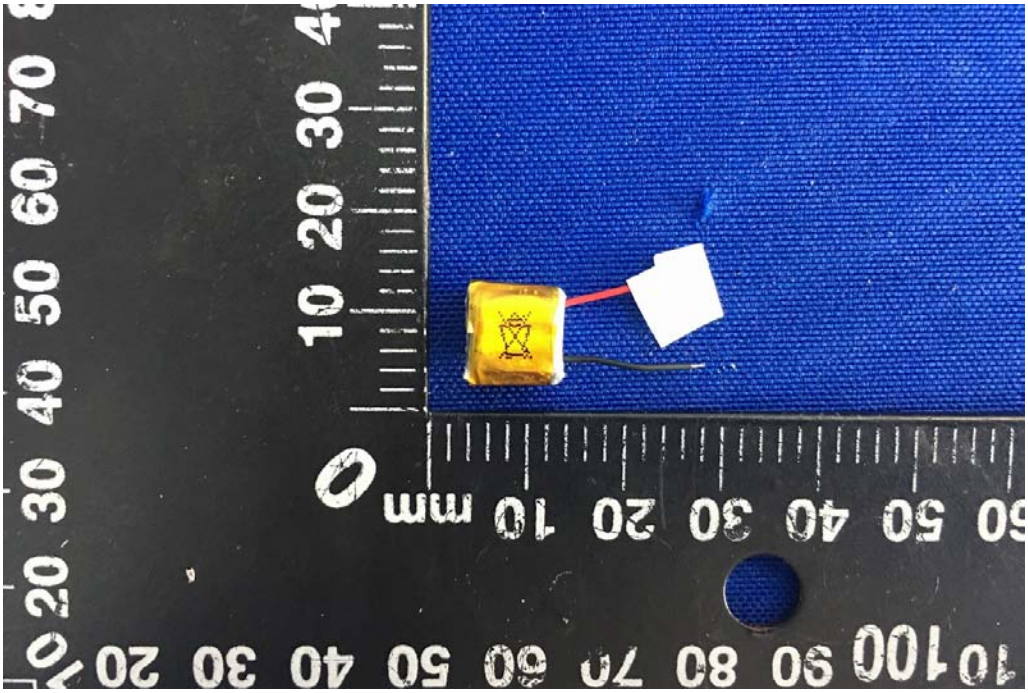


Figure 2 Back view of cell

--End of Report--