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TESTING
CNAS L10443

UN38.3 检 测 报 告
UN38.3 Test Report

产品名称： Name of Samples:	锂离子聚合物电池 Lithium ion polymer battery
型号： Model:	551141
申请商名称： Applicant's name:	福升通訊股份有限公司 General Infinity Co., Ltd
测试标准： Test Standard:	ST/SG/AC.10/11/Rev.6/Amend.1/section 38.3

东莞市华检电磁技术有限公司
Dongguan CTL Electromagnetic Technology Co., Ltd.

TEST REPORT
UN38.3, Sixth Edition Amendment 1
Recommendations on transport of dangerous goods, manual of test and criteria, Section 38.3 - Lithium metal and lithium ion Batteries

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Test specification:	
Standard ..... :	ST/SG/AC.10/11/Rev.6/Amend.1/Section 38.3
Test procedure ..... :	Test Report
Non-standard test method..... :	N/A
Test item description ..... :	Lithium ion polymer battery
Trade Mark ..... :	--
Model/Type reference..... :	551141
Ratings..... :	3.7Vd.c., 220mAh, 0.814Wh

List of Attachments:

Appendix 1: 4 pages of Photo Documentation

Summary of testing:

Tests performed (name of test and test clause):

Test items	Sample Number
T.1: Altitude simulation / 高度模拟	B1# -B10#
T.2: Thermal test / 温度测试	
T.3: Vibration / 振动	
T.4: Shock / 冲击	
T.5: External short circuit / 外接短路	
T.6: Crush / 挤压 or Impact/撞击	C1# - C10#
T.7 Overcharge / 过充电	B11# - B18#
T.8: Forced discharge / 强制放电	C11# - C30#

The sample's status is good.
样品状况良好。

The conditions of the batteries of samples No. B1# to B5# are at first cycle, in fully charged states.
样品编号B1# - B5#为第一次循环充放电周期完全充电状态的电池。

The conditions of the batteries of samples No. B6# - B10# are after 25 cycles ending in fully charged states.
样品编号B6# - B10#为二十五次循环充放电周期后完全充电状态的电池。

The conditions of the cells of samples No. C1# to C5# are at first cycle at 50% of the design rated capacity.
样品编号C1# - C5#为第一次循环充放电周期充电至标称容量的50%状态的电芯。

The conditions of the cells of samples No. C6# to C10# are after 25 cycles at 50% of the design rated capacity.
样品编号C6# to C10#为二十五次循环放电周期充电至标称容量的50%状态的电芯。

The conditions of the batteries of samples No. B11# - B14# are at first cycle, in fully charged states.
样品编号B11# - B14#为第一次循环充放电周期后完全充电状态的电池。

The conditions of the batteries of samples No. B15# - B18# are after 25 cycles ending in fully charged states.
样品编号B15# - B18#为二十五次循环充放电周期后完全充电状态的电池。

The conditions of the cells of samples No. C11# to C20# are at first cycle, in fully discharged states.
样品编号C11# - C20#为第一次循环充放电周期完全放电状态的电芯。

The conditions of the cells of samples No. C21# to C30# are after 25 cycles ending in fully discharged states.
样品编号C21# to C30#为二十五次循环充放电周期后完全放电状态的电芯。

The Lithium ion polymer battery submitted by manufacturer are single cell batteries. According to the standard, a single cell Battery is considered a "cell" and shall be tested according to the testing requirements for "cell".
制造商提供的锂离子聚合物电池为单电芯电池，根据标准规定，单电芯电池要作为电芯来评估，按照电芯的测试要求进行测试。

Test Procedure:

1.Each battery type is subjected to tests T.1 to T.8. Tests T.1 to T.5 are conducted in sequence on the same battery. Tests 6 and 8 are conducted using not otherwise tested 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.

每一种类型的电池均应进行T.1至T.8项试验。电池必须按顺序在相同的一组电池上进行试验T.1至T.5。试验T.6和T.8应使用未另外试验过的电池。试验T.7可以使用先前在试验T.1至T.5中使用过的未损坏电池进行，以便测试进行在循环过的电池上。

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

Mass loss(%)=$(M_1-M_2)/M_1\times100$

为了量化质量损失，可用以下公式计算：质量损失(%)=$(M_1-M_2)/M_1\times100$

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 is considered as "no mass loss".

式中M_1是试验前的质量,M_2是试验后的质量.如果质量损失不超过下表所列的数值,应视为“无质量损失”。

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

3. In test T.1 to T.4, 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 battery after testing is not less than 90% of its voltage immediately prior to this procedure.

在测试T.1至T.4中，电池须满足无渗漏、无泄气、无解体、无破裂和无起火，并且每个试验电池在试验后的开路电压不小于其在进行这一试验前电压的90%。

Possible test case verdicts:
测试判定
- test case does not apply to the test object.....: N/A
判定不适用于测试对象
- test object does meet the requirement.....: P (Pass)
测试符合规定
- test object does not meet the requirement .....: F (Fail)
测试不符合规定

Testing.....:

Date of receipt of test item.....: 2020-11-27

Date (s) of performance of tests .....: 2020-11-27 to 2021-01-04

General remarks:

The test results presented in this report relate only to the object tested.

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"(See Enclosure #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

General product information:

The batteries, model no.551141, are Lithium ion polymer battery and used in port-able applications, consist of a single Lithium ion polymer cell, model no.551141.
Additionally, details information of the cell and battery, as following:

Product name	Lithium ion polymer cell	Lithium ion polymer battery
Type/model	551141	551141
Nominal voltage	3.7V	3.7V
Rated capacity	220mAh	220mAh
Recommended charging voltage	4.2V	4.2V
Maximum charging current	220mA	220mA
Maximum discharging current	220mA	220mA
Discharge cut-off voltage	3.0V	3.0V
Dimensions	Max: 5.7mm X 11.0mm X 40.5mm	Max: 5.7mm X 11.0mm X 42.5mm
Weight	Approx.4.3g	Approx.4.5g
Appearance of Samples	Silvery and Pouch	Silvery and Pouch

The final evaluation of the battery must be conducted in the end product for which the battery will be used.

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
38.3.4.1	**Test T.1: Altitude simulation/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) /将电芯和电池在温度为20±5°C、大气压力不大于11.6kpa的环境中贮存不少于6个小时。		P
	Cells and batteries meet this requirement if there is no mass loss, 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. /电芯和电池符合要求：无质量损失、无漏液、无冒烟、无分解、无破裂以及无着火现象；电芯或电池测试后的开路电压不低于测试前开路电压的90%。此项关于电压方面的要求不适用于完全放电后的电芯和电池。	No leakage, no venting, no disassembly, no rupture and no fire. / 无漏液、无冒烟、无分解、无破裂以及无着火现象。 The data see table 1. / 测试数据见表1。	P
38.3.4.2	**Test T.2: Thermal test/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 10 times, after which all test cells and batteries are to be stored for 24 hours at ambient temperature (20 ±5°C). /首先将样品放在72±2°C的环境中放置至少6个小时，然后放在- 40±2°C的环境中放置至少6个小时。温度转换的最大间隔时间为30分钟。如此循环10次，最后将样品放在20±5°C的环境中静置24小时。		P
	For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12 hours. /对于大电芯和大电池，在高温和低温中放置的时间最少12个小时。		N/A
	Cells and batteries meet this requirement if there is no mass loss, 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. /电芯和电池符合要求：无质量损失、无漏液、无冒烟、无分解、无破裂以及无着火现象；电芯或电池测试后的开路电压不低于测试前开路电压的90%。此项关于电压方面的要求不适用于完全放电后的电芯和电池。	No leakage, no venting, no disassembly, no rupture and no fire. / 无漏液、无冒烟、无分解、无破裂以及无着火现象。 The data see table 1. / 测试数据见表1。	P
38.3.4.3	**Test T.3: Vibration/振动**		**P**

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
	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. /样品必须牢固地安装在振动台台面上。振动以正弦波形式，以7Hz增加至200Hz，然后减少回到7Hz为一个循环，一个循环持续15分钟。对样品从三个互相垂直的方向上循环12次，共3个小时。其中一个振动方向必须是垂直样品的极性平面。		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). /对于质量不大于12kg的样品(电芯和小电池)和质量超过12kg的电池(大电池)，对数扫频不同。		P
	For cells and small batteries: from 7 Hz a peak acceleration of 1 gn is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 8 gn occurs (approximately 50 Hz). A peak acceleration of 8 gn is then maintained until the frequency is increased to 200 Hz. /对于电芯和小电池，对数扫频为：从7Hz开始保持1gn的最大加速度直到频率为18Hz，然后将振幅保持在0.8mm (总偏移1.6mm) 并增加频率直到最大加速度达到8gn (频率约为50Hz)，将最大加速度保持在8gn直到频率增加到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 2 gn is then maintained until the frequency is increased to 200 Hz. /对于大电池，对数扫频为：从7Hz开始保持1gn的最大加速度直到频率为18Hz，然后将振幅保持在0.8mm (总偏移1.6mm) 并增加频率直到最大加速度达到2gn (频率约为25Hz)，将最大加速度保持在2gn直到频率增加到200Hz。		N/A

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
	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./电芯和电池符合要求：无漏液、无冒烟、无分解、无破裂以及无着火现象；电芯或电池测试后的开路电压不低于测试前开路电压的90%。此项关于电压方面的要求不适用于完全放电后的电芯和电池。	No leakage, no venting, no disassembly, no rupture and no fire. / 无漏液、无冒烟、无分解、无破裂以及无着火现象。 The data see table 1. / 测试数据见表1。	P
38.3.4.4	**Test T.4: Shock/冲击**		**P**
	Test cells shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test cell. 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. Each cell 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 cell or battery for a total of 18 shocks. /以稳固的托架固定住每个样品。对每个电芯样品以峰值为150gn的半正弦的加速度撞击，脉冲持续6ms，另外，大电芯须经受最大加速度50gn和脉冲持续时间11ms的半正弦波冲击，每个样品必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。		N/A
	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. .Each cell or battery is subjected to three shocks in the positive direction followed by three shocks in the negative direction of each of three mutually perpendicular mounting positions of the cell for a total of 18 shocks. The formulas below are provided to calculate the appropriate minimum peak accelerations. /每个电池经受冲击峰值加速度取决于电池的质量，小电池的脉冲持续时间为6ms，大电池的脉冲持续时间为11ms，每个样品必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,提供下面的公式来计算合适的最小峰值加速度。		P

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
	<table><tr><th>Battery</th><th>Minimum peak acceleration</th><th>Pulse duration</th></tr><tr><td>Small batteries</td><td>150 g_n or result of formula $Acceleration(g_n) = \sqrt{\left(\frac{100850}{mass^*}\right)}$ whichever is smaller</td><td>6 ms</td></tr><tr><td>Large batteries</td><td>50 g_n or result of formula $Acceleration(g_n) = \sqrt{\left(\frac{30000}{mass^*}\right)}$ whichever is smaller</td><td>11 ms</td></tr></table> * Mass is expressed in kilograms.		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. /电芯和电池符合要求：无漏液、无冒烟、无分解、无破裂以及无着火现象；电芯或电池测试后的开路电压不低于测试前开路电压的90%。 此项关于电压方面的要求不适用于完全放电后的电芯和电池。	No leakage, no venting, no disassembly, no rupture and no fire. / 无漏液、无冒烟、无分解、无破裂以及无着火现象。 The data see table 1. / 测试数据见表1。	P
38.3.4.5	**Test T.5: External short circuit/外部短路**		**P**
	The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches 57±4°C 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°C. 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. /保持测试环境温度稳定在57 ±4°C，以便 样品外表温度达到57±4°C，然后将样品正负极用小于0.1欧姆的总电阻回路进行短路，样品的外表温度恢复到57±4°C之后保持短路状态1小时以上。		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. /电芯和电池符合要求：在测试过程中以及之后6个小时内，外表温度不超过170°C，并且无分解、无破裂和无着火现象发生。	No disassembly, no rupture and no fire during the test and within six hours after the test./在测试过程中以及之后6个小时内，外表温度不超过170° C，并且无分解、无破裂和无着火现象发生。 The data see table 1. / 测试数据见表1。	P
38.3.4.6	**Test T.6: Impact / Crush/撞击/挤压**		**P**
	Test procedure – Impact (applicable to cylindrical cells greater than or equal to 18 mm in diameter) /撞击(适合于直径大于或等于18mm的圆柱形电芯)	Pouch cell/袋状电芯	N/A

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
	The sample cell or component cell is to be placed on a flat smooth surface. A 15.8 mm±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±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. /将样品放在一个平坦的光滑平面上。将一直径为15.8 mm± 0.1mm，长度不小于6cm的316不锈钢棒横过样品中部放置后，将一质量为9.1 kg±0.1 kg的重物从61±2.5 cm的高度落向样品		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±0.1mm diameter curved surface lying across the centre of the test sample. Each sample is to be subjected to only a single impact. /接受撞击的样品，纵轴应与平坦的表面平行并与横放在样品中心的直径15.8 mm±0.1mm弯曲表面的纵轴垂直。每一个样品只接受一次撞击。		N/A
	Test Procedure – Crush (applicable to prismatic, pouch, coin/button cells and cylindrical cells not more than 18 mm 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1.5cm/s。挤压持续进行，直到出现以下三种情况之一		P
	(a) The applied force reaches 13 kN±0.78 kN; /施加力达到13 kN±0.78 kN		P
	(b) The voltage of the cell drops by at least 100 mV; /样品的电压下降至少100mV		N/A
	(c) The cell is deformed by 50% or more of its original thickness. /电池变形达原始厚度的50%以上。		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. /棱柱形或袋状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。圆柱形应从与纵轴垂直的方向施压。		P

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
	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./每个样品都是全新样品，并且只经受一次施压。施压结束后样品应静置观察6小时。		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. /电芯满足要求：在测试过程中以及之后6个小时内，外表温度不超过170°C，并且无分解和无着火现象发生。	No disassembly and no fire. /无分解，无着火现象发生。 The data see table 2. / 测试数据见表2。	P
38.3.4.7	**Test T.7: Overcharge/过充电**		**P**
	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：		P
	(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. /如果制造商宣称的充电电压不超过18V，本测试的最小充电电压应是制造商宣称的最大充电电压的两倍或者是22V之中的较小者。	The voltage of the test is 8.4V, and the current is 0.44A. / 测试电压为8.4V，电流为0.44A.	P
	(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. /如果制造商宣称的充电电压超过18V，本测试的最小充电电压应该是制造商宣称的最大充电电压的1.2倍。		N/A
	There is no disassembly and no fire during the test and within seven days after the test. /在测试中和测 试完成后7天内，样品无分解和无着火现象。	No disassembly and no fire. /无分解，无着火现象发生。 The data see table 3. /测试数据见表3。	P
38.3.4.8	**Test T.8: Forced discharge/强制放电**		**P**

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict
	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. /在室温下，将单个电芯连接在12V的直流电源上进行强制放电，此直流电源供给每个电芯初始电流为制造商宣称的最大放电电流。 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). /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)。		P
	There is no disassembly and no fire during the test and within seven days after the test. /在测试中和测 试完成后7天内，样品无分解和无着火现象发生	No disassembly and no fire. /无分解和无着火现象发生。 The data see table 4. / 测试数据见表4	P

Tables

Table 1: T.1~T.5 / 表1. 测试T.1~测试T.5											
Sample No. 样品编号	Mass prior to Test/试验前质量(g)	OCV prior to test/ 试验前电压(V)	Test 1: Altitude Simulation/ 试验1：高度模拟		Test 2: Thermal test/ 试验 2：温度试验		Test 3: Vibration/ 试验3：振动		Test 4 : Shock/ 试验 4：冲击		Test 5 :External Short Circuit/试验5：外部短路
			Mass loss 质量损失(%)	Voltage after test/ voltage pre-test 试验后电压/试验前电压(%)	Mass loss 质量损失(%)	Voltage after test/ voltage pre-test 试验后电压/试验前电压(%)	Mass loss 质量损失(%)	Voltage after test/ voltage pre-test 试验后电压/试验前电压(%)	Mass loss 质量损失(%)	Voltage after test/ voltage pre-test 试验后电压/试验前电压(%)	Temp. (温度(°C)
B1#	4.413	4.18	0.00	99.9	0.05	98.8	0.00	99.9	0.02	99.9	56.8
B2#	4.370	4.18	0.00	99.9	0.05	98.7	0.02	99.9	0.02	99.9	57.5
B3#	4.429	4.18	0.00	99.9	0.05	98.7	0.00	99.8	0.00	99.8	57.3
B4#	4.460	4.18	0.00	99.9	0.02	98.8	0.02	99.9	0.02	99.9	57.5
B5#	4.417	4.18	0.00	99.9	0.05	98.7	0.00	99.9	0.00	99.9	57.2
B6#	4.440	4.18	0.00	99.9	0.07	98.7	0.02	99.8	0.00	99.9	57.4
B7#	4.425	4.18	0.00	99.9	0.05	98.7	0.00	99.9	0.02	99.9	57.3
B8#	4.441	4.18	0.00	99.9	0.05	98.7	0.00	99.9	0.02	99.9	56.9
B9#	4.401	4.18	0.00	99.7	0.05	99.0	0.00	99.9	0.02	99.9	57.5
B10#	4.399	4.18	0.00	99.9	0.05	98.7	0.00	99.9	0.00	99.9	57.7

Table 2: Crush or impact/ 表2：挤压或撞击						
Test 6: Crush/测试T.6:挤压	Sample No./样品编号	C1#	C2#	C3#	C4#	C5#
	OCV prior to test /实验前开路电压(V)	3.81	3.81	3.81	3.82	3.82
	Temp./温度 (°C)	102.3	110.9	103.1	108.4	105.4
	Sample No./样品编号	C6#	C7#	C8#	C9#	C10#
	OCV prior to test /实验前开路电压(V)	3.82	3.81	3.82	3.82	3.82
	Temp./温度 (°C)	110.1	104.2	103.9	108.4	105.2

Table 3：Overcharge / 表3：过充电									
Test 7: Overcharge /测试T.7：过充电	Sample No./样品编号	B11#	B12#	B13#	B14#	B15#	B16#	B17#	B18#
	OCV prior to test/实验前开路电压 (V)	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18

Table 4：Forced discharge / 表4：强制放电											
Test 8: Forced discharge/测试T.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/实验前开路电压 (V)	3.52	3.51	3.52	3.52	3.51	3.51	3.52	3.51	3.50	3.50
	Sample No./样品编号	C21#	C22#	C23#	C24#	C25#	C26#	C27#	C28#	C29#	C30#
	OCV prior to test/实验前开路电压 (V)	3.51	3.50	3.51	3.51	3.51	3.52	3.51	3.51	3.51	3.51

Appendix 1

Photo Documentation

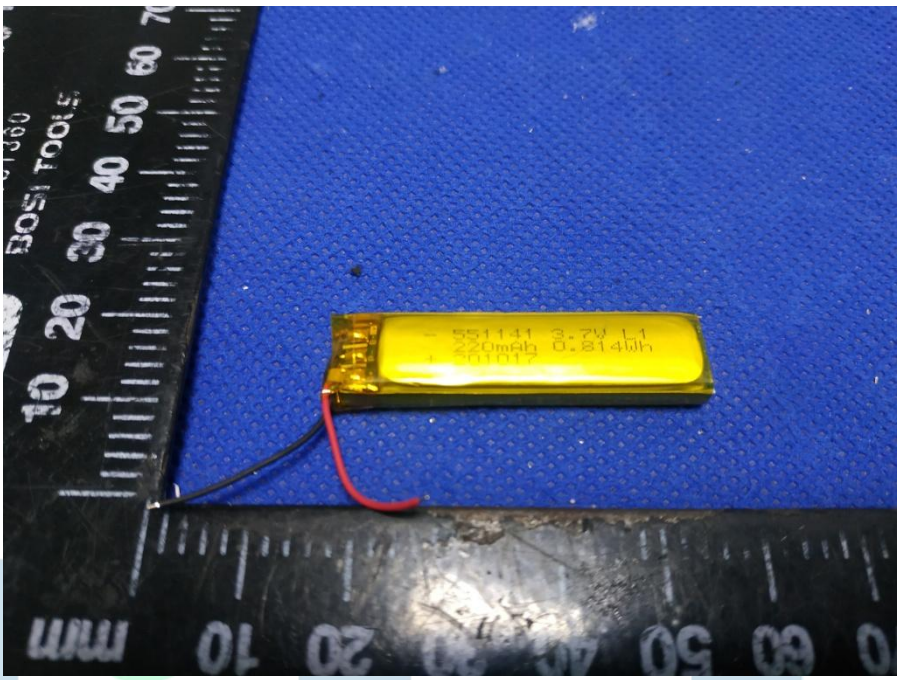

Fig.1-Front view of battery

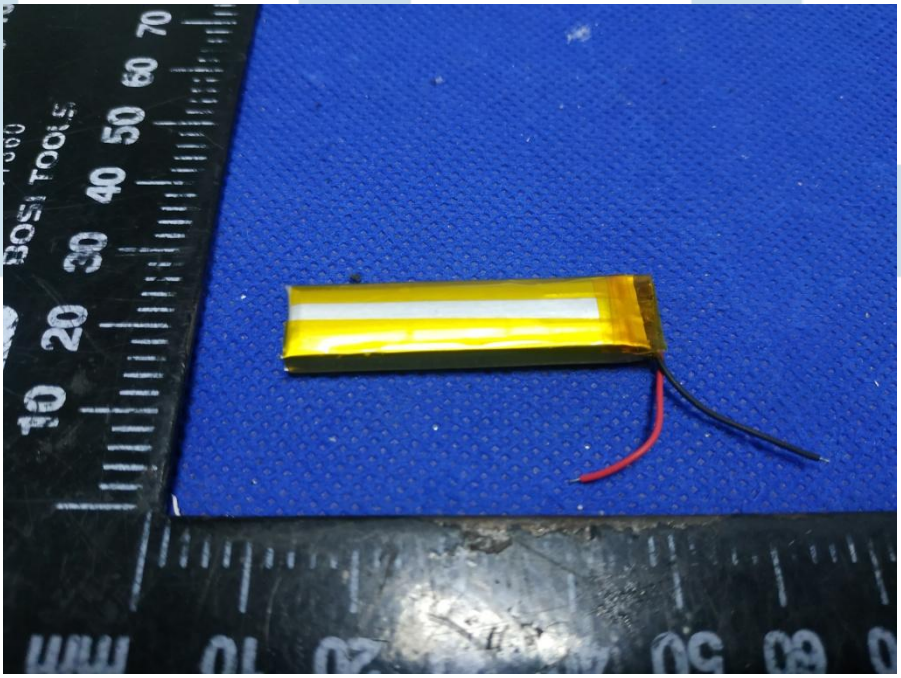

Fig.2-Back view of battery

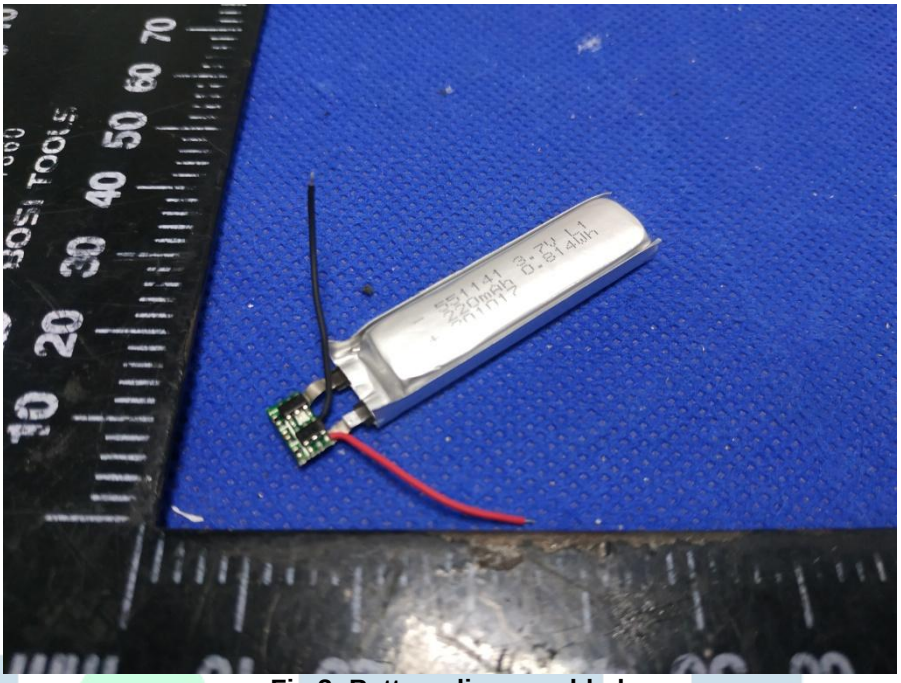

Fig.3- Battery disassembled

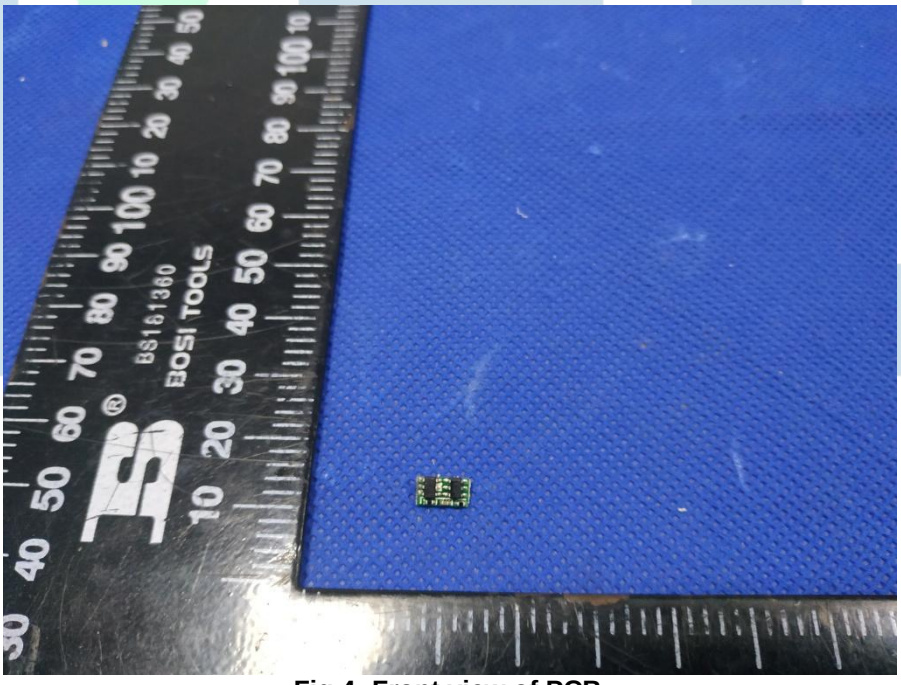

Fig.4- Front view of PCB

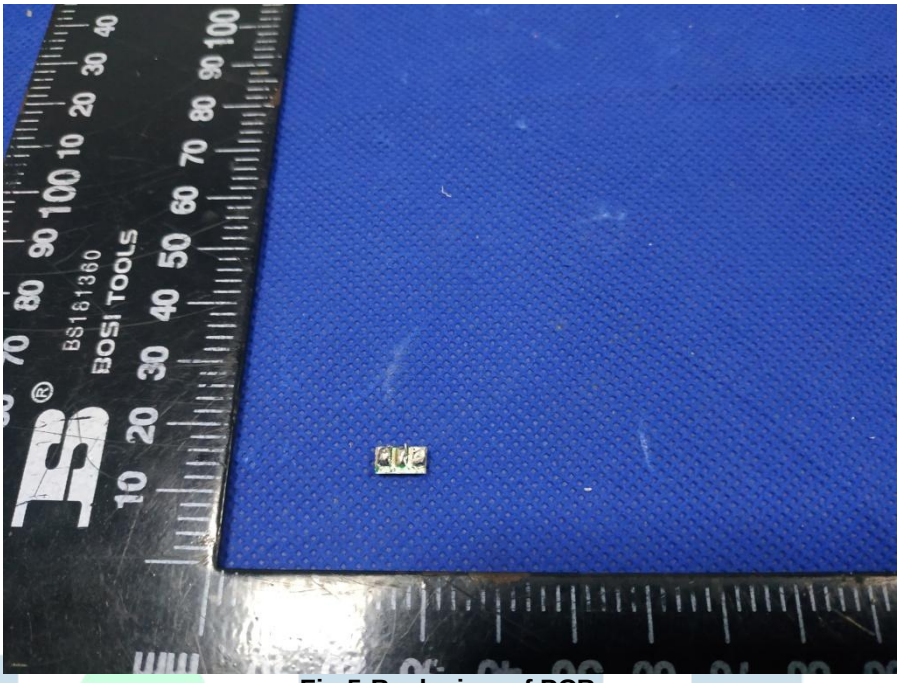

Fig.5-Back view of PCB

Fig.6- Front view of cell

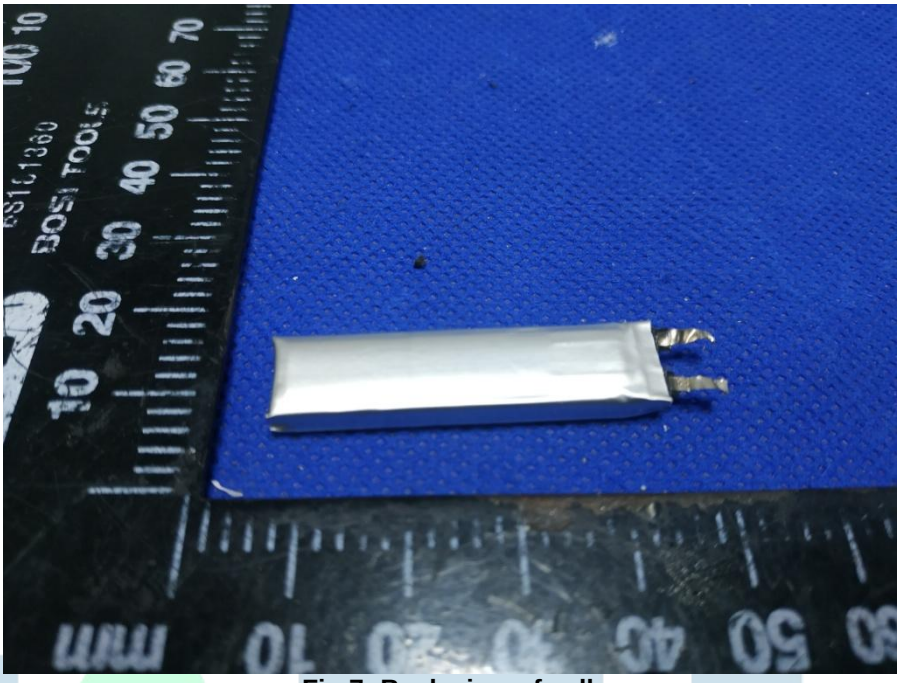

Fig.7- Back view of cell

---End of Test Report--

Important
注意事项

1. The test report is invalid without the test stamp of DGCTL.
   本报告书无本公司测试章无效.
2. Nobody is allowed to photocopy or partly photocopy this test report without written permission of DGCTL.
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3. The test report is invalid without the signatures of Approver, Reviewer and Testing engineer.
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4. The report is invalid when anything of following happens – illegal transfer, reproduce, embezzlement, imposture, modification or tampering in any media form.
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5. Objections to the test report must be submitted to DGCTL within 15 days.
   对报告书若有异议，应于收到报告之日起15天内向本公司提出。
6. The test report is valid for the tested samples only.
   本报告仅对测试样品有效。

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