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CNAS L3110

UN38.3 TEST REPORT

报告编号/ Reference No.	:	WTX23D10225641B001
委托方/ Applicant	:	黄山金地电子有限公司 Huangshan Golden Land Electronics Inc
地址/ Address	:	黄山市徽州区岩寺镇 Huangshan city huizhou district rock temple town
制造商/ Manufacturer	:	深圳市沃普泰能源科技有限公司 Shenzhen WIPT energy technology co., LTD
地址/ Address	:	深圳市龙华新区龙华街道伍屋科技园 Longhua new district of shenzhen longhua street wu house science and technology park
产品名称/ Product Name	:	可充电锂电池 Rechargeable Lithium Battery
型号/ Model No.	:	UM3200-12
测试规范/ Test specification	:	联合国《试验和标准手册》第 7 版修订 1,第 38.3 章 Section 38.3 Recommendations-Manual of Tests and Criteria Seventh revised edition Amendment 1 ST/SG/AC.10/11/Rev.7/Amend1 Section 38.3
收样日期/ Date of Receipt sample	:	2023-10-18
检测日期/ Date of Test	:	2023-10-18 to 2023-10-27
签发日期/ Date of Issue	:	2023-10-30
检测结果/ Test Result	:	所提供的样品符合以上测试标准 The submitted samples comply with the above standards

报告制作 Prepared By:

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产品一般信息 General product information:	
产品分类 Classification ..... :	可充电锂电池 Rechargeable Lithium Battery
型号 Model ..... :	UM3200-12
额定值 Ratings ..... :	11.1V, 3200mAh, 35.52Wh
商标 Trade mark..... :	/
标准充电电流 Standard charge current ..... :	600mA
最大充电电压 Max. charge voltage ..... :	12.6V
最大充电电流 Max. charge current ..... :	1200mA
标准放电电流 Standard discharge current .... :	1200mA
最大放电电流 Max. discharge current ..... :	2000mA
放电截止电压 Discharge cut-off voltage ..... :	8.4V
尺寸 Dimension ..... :	111.7mm×64.0mm×31.7mm
电芯型号 Cell model..... :	NCR18650BD
电芯额定容量 Cell rated capacity..... :	3200mAh
电芯个数 Cells number..... :	3Pcs, 3S1P
报告中可能用到的结论标识 Possible test case verdicts:	
测试项目不适用该产品 test case does not apply to the test object ..... :	不适用 N/A
测试项目符合标准的要求 test object does meet the requirement ..... :	合格 P(ass)
测试项目不符合标准的要求 test object does not meet the requirement ..... :	不合格 F(ail)
测试结论 Test conclusion:	
由黄山金地电子有限公司送检的可充电锂电池，根据联合国《试验和标准手册》第 7 版修订 1 第 38.3 章进行测试，测试项目见下页表格，测试结果符合标准相关要求 The Rechargeable Lithium Battery submitted by Huangshan Golden Land Electronics Inc are tested according to Section 38.3 Recommendations-Manual of Tests and Criteria Seventh revised edition Amendment 1 (ST/SG/AC.10/11/Rev.7/Amend1 Section 38.3). Test items see table of next page. The test results comply with the relevant requirement of the standard.	

测试项目 Test item	样品编号 Sample No.	样品状态 Samples' State
T1~T5	B01#~B04#	第 1 个充放电周期，完全充电状态 At first cycle, in fully charged states
	B05#~B08#	第 25 个充放电周期，完全充电状态 After 25 cycles ending in fully charged states
T6	C01#-C05#	第 1 个充放电周期 50%设计额定容量状态 At first cycle at 50% of the design rated capacity
	C06#-C10#	第 25 个充放电周期 50%设计额定容量状态 After 25 cycle at 50% of the design rated capacity
T7	B09#~B12#	第 1 个充放电周期，完全充电状态 At first cycle, in fully charged states
	B13#~B16#	第 25 个充放电周期，完全充电状态 After 25 cycles ending in fully charged states
T8	C11#-C20#	第 1 个充放电周期完全放电状态 At first cycle in fully discharged states
	C21#-C30#	第 25 个充放电周期完全放电状态 After 25 cycles ending in fully discharged states

备注：

本报告中以点号代替小数点

测试环境条件，环境温度 20℃-25℃，环境湿度：45%-75%

分包测试：不适用

Remarks:

Throughout this report, point is used as the decimal separator

Test environment condition, ambient temperature 20℃-25℃, ambient humidity 45%-75%

Subcontracted test condition：N/A

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ST/SG/AC.10/11/Rev.7/Amend1 Section 38.3			
条款 Clause	测试要求 Requirement-Test	结果评判 Result-Remark	结论 Verdict
38.3.4	**程序 /Procedure**		**P**
	小型电池或电池组必须按顺序进行试验 T.1 至 T.5。/Test T.1 to T.5 are conducted in sequence on the same cell or battery.		P
	试验 T.6 和 T.8 应使用未另外试验过的电池或电池组 /Test T.6 and T.8 are conducted using not otherwise tested cells or batteries.		P
	试验 7 使用原先在试验 T.1 至 T.5 中使用过的未损坏电池进行/Test T.7 conducted using undamaged batteries previously used in Tests T.1 to T.5 for purposes of testing on cycled batteries.		N/A
质量损失 Mass loss	用以下测试步骤 Following procedure is provided:		P
	质量损失（%）=（M1-M2）/M1*100 此式中 M1 是试验前的质量，M2 是试验后的质量。如果质量损失不超过下表所列的数值，即为“无质量损失” Mass loss(%)=(M1-M2)/M1*100 Where M1 is the mass before the test and M2 is the mass after the test. When mass loss does not exceed the values in below table, it shall be considered as “no mass loss”		--
	电芯或电池质量 M Mass M of cell or battery / 质量损失限制 Mass loss limit M<1g / 0.5% 1g≤M≤75g / 0.2% M≥75g / 0.1%		--
38.3.4.1	**试验 T.1： 高度模拟 /Test T.1: Altitude Simulation**		**P**
38.3.4.1.1	目的/Purpose		P
	本试验模拟在低压条件下的空运/This test simulates air transport under low-pressure conditions.		--
38.3.4.1.2	试验程序/Test procedure		P
	存储气压/Stored at a pressure	11.6 kPa	--
	环境温度/Ambient temperature (20 ± 5℃)	23.8℃	--
	存储时间/Stored times(≥ 6 hours)	6 hours	--
38.3.4.1.3	要求/Requirement		P
	无渗漏、无排气、无解体、无破裂和无起火，并且每个试验电芯或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%,电压的要求不适用与完全放电状态的试验电池和电池组 / No leakage, no venting, no disassembly, no rupture and no fire and 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.	无渗漏、无排气、无解体、无破裂和无起火，数据见表 1 / No leakage, no venting, no disassembly, no rupture and no fire. The data see Table 1	P

ST/SG/AC.10/11/Rev.7/Amend1 Section 38.3			
条款 Clause	测试要求 Requirement-Test	结果评判 Result-Remark	结论 Verdict
38.3.4.2	**试验 T.2 温度试验/ Test T.2: Thermal Test**		**P**
38.3.4.2.1	目的/Purpose		P
	本试验评估电池和电池组的密封完善性和内部电连接，试验是利用迅速和极端的温度变化进行/This test assesses cell and battery seal integrity and internal electrical connections. The test is conducted using rapid and extreme temperature changes.		--
38.3.4.2.2	试验程序/Test procedure		P
	试验温度和存储时间/ Test temperature and stored hours	1) 72±2℃, ≥6h 2) -40±2℃, ≥6h	--
	两个极端试验温度的最大间隔时间/The maximum time interval	极端温度之间间隔时间≤30min /Between test temperature extremes is ≤30 minutes.	--
	测试时间/ Test times	重复 10 次/Repeated 10 times	--
	所有电池和电池组在环境温度(20±5℃)下存放 24 小/After which all test cells and batteries are to be stored for 24 hours at ambient temperature (20±5℃).	环境温度/Ambient temperature 24.2℃	--
	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/For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12 hours		N/A
38.3.4.2.3	要求/Requirement		P
	无渗漏、无排气、无解体、无破裂和无起火，并且每个试验电芯或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%,电压的要求不适用与完全放电状态的试验电池和电池组 / No leakage, no venting, no disassembly, no rupture and no fire and 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.	无渗漏、无排气、无解体、无破裂和无起火；数据见表 1/ No leakage, no venting, no disassembly, no rupture and no fire. The data see Table 1	P

ST/SG/AC.10/11/Rev.7/Amend1 Section 38.3			
条款 Clause	测试要求 Requirement-Test	结果评判 Result-Remark	结论 Verdict
38.3.4.3	**试验 3 振动 /Test T.3: Vibration**		**P**
38.3.4.3.1	目的/ Purpose		P
	本试验模拟运输过程中的振动/This test simulates vibration during transport.		--
38.3.4.3.2	测试程序/ Test procedure		P
	电池和电池组以不使电芯变形且能正确地传播振动的方式紧固在振动机平面上/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.		P
	振动应以正弦波形振动，频率在 7Hz 和 200Hz 之间摆动再回到 7Hz 的对数扫频为时 15min / The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7Hz and 200Hz and back to 7Hz traversed in 15minutes.		P
	从 7HZ 开始保持 1 g_n 的最大加速度直到频率达到 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 8 g_n (频率约为 50HZ)。将最大加速度保持在 8 g_n 直到频率增加到 200HZ /From 7 Hz to a peak acceleration of 1 g_n is maintained until 18Hz is reached. The amplitude is then maintained at 0.8mm (1.6mm 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 frequency is increased to 200 Hz		P
	振动须对三个互相垂直的电池安装方位的每一方向都重复进行 12 次，总共 3 小时。其中一个方向必须与端面垂直/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.		P
38.3.4.3.3	要求/ Requirement		P
	试验中和试验后无渗漏、无排气、无解体、无破裂和无起火，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的立即测得开路电压不小于其在进行这一试验前电压的 90%,电压的要求不适用与完全放电状态的试验电池和电池组/No leakage, no venting, no disassembly, no rupture and no fire during the test and after the test and 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.	无渗漏、无排气、无解体、无破裂和无起火，数据见表 1/ No leakage, no venting, no disassembly, no rupture and no fire during the test .The data see Table 1	P

ST/SG/AC.10/11/Rev.7/Amend1 Section 38.3			
条款 Clause	测试要求 Requirement-Test	结果评判 Result-Remark	结论 Verdict
38.3.4.4	**试验 4 冲击/ Test T.4: Shock**		**P**
38.3.4.4.1	目的/ Purpose		P
	本试验评估电池和电池组抵抗累计冲击的耐受程度/This test assesses the robustness of cells and batteries against cumulative shocks		--
38.3.4.4.2	测试程序 /Test procedure		P
	试验电池和电池组用坚硬的支架固定在试验装置上，支架支撑着每个试验电池的所有安装面;/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.		P
	电池经受峰值加速度 150 g_n 和脉冲持续时间 6ms 的半正弦波冲击/Each cell shall be subjected to a half-sine shock of peak acceleration of 150 g_n and pulse duration of 6milliseconds.		P
	大电池经受峰值加速度 50 g_n 和脉冲持续时间 11ms 的半正弦波冲击/Alternatively, large cells may be subjected to a half-sine shock of peak acceleration of 50 g_n and pulse duration of 11 milliseconds.		N/A
	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。小型电池组的脉冲持续时间为 6ms,大型电池组为 11ms。以下提供的公式用来计算适合的最小峰值加速度/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 provide to calculate the appropriate minimum peak accelerations.		P
	<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 $Acceleration(g_n)=\sqrt{(\frac{100850}{mass^{*}})}$ Whichever is smaller</td><td>6ms</td></tr><tr><td>Large batteries</td><td>50 g_n or result of formula $Acceleration(g_n)=\sqrt{(\frac{30000}{mass^{*}})}$ Whichever is smaller</td><td>11ms</td></tr></table>		P
	每个电池和电池组在三个互相垂直的安装方位的正方向经受三次冲击，接着反方向经受三次冲击，总共经受 18 次冲击/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.		P

ST/SG/AC.10/11/Rev.7/Amend1 Section 38.3			
条款 Clause	测试要求 Requirement-Test	结果评判 Result-Remark	结论 Verdict
38.3.4.4.3	要求/Requirement		P
	无渗漏、无排气、无解体、无破裂和无起火，并且每个试验电芯或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%，电压的要求不适用与完全放电状态的试验电池和电池组/No leakage, no venting, no disassembly, no rupture and no fire and 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.	无渗漏、无排气、无解体、无破裂和无起火，数据见表 1 /No leakage, no venting, no disassembly, no rupture and no fire. The data see Table 1	P
38.3.4.5	**试验 5 外部短路 /Test T.5: External Short Circuit**		**P**
38.3.4.5.1	目的/ Purpose		P
	本试验模拟外部短路/This test simulates an external short circuit.		--
38.3.4.5.2	试验程序 /Test procedure		P
	电池和电池组加热一段时间，外壳稳定在温度 57±4℃下后开始测试。时间根据电池和电池组的尺寸和设计，评估和记录加热时间。如果不可评估此值，小型电池和电池组需至少暴露 6h,大型电池和电池组需 12h//The cell or battery to be tested shall be heated for a period of time necessary to reach a homogeneous stabilized temperature 57±4℃, 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.		P
	在 57±4℃温度下，电池和电池组需经受外部电阻 0.1ohm 的短路试验/Then the cell or battery at 57±4℃ shall be subjected to one short circuit condition with a total external resistance of less than 0.1 ohm.		P
	电池和电池组外部壳体温度恢复到 57±4℃后，短路需持续至少 1 小时，或大型电池组壳体温度值下降测试中最高温升值的一半，并且保持在这个值以下/This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to 57±4℃, 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.		P
38.3.4.5.3	要求/ Requirement		P
	外壳温度不超过 170℃，并且在试验过程中及试验后 6 小时内无解体、无破裂、无起火 Cells and batteries external temperature does not exceed 170℃ and there is no disassembly, no rupture and no fire during the test and within six hours after this test.	试验过程中及试验后 6 小时内无解体、无破裂、无起火，数据见表 2 / No disassembly, no fire during the test and within six hours after this test. The data	P

ST/SG/AC.10/11/Rev.7/Amend1 Section 38.3			
条款 Clause	测试要求 Requirement-Test	结果评判 Result-Remark	结论 Verdict
		see Table 2.	
38.3.4.6	**试验 6 撞击/挤压 Test T.6: Impact / Crush**		**P**
38.3.4.6.1	目的 /Purpose		P
	本试验模拟撞击或挤压等可能造成内部短路的机械性破坏/These tests simulate mechanical abuse from an impact or crush that may result in an internal short circuit.		--
38.3.4.6.2	**试验程序-撞击**（适用于直径不小于18毫米的圆柱形电池）/Test procedure – Impact (applicable to cylindrical cells not less than 18.0 mm in diameter)		P
	将式样电池或元件电池放在平坦光滑的表面上。一根 316 型不锈钢棒横放在试样中心，钢棒直径 15.8 mm ± 0.1mm,长度至少 6cm，或电池最长端的尺度，取二者之长者。将一块 9.1 kg ±0.1kg 的重锤从 61 ± 2.5cm 高处跌落到钢棒和试样交叉处，使用一个几乎没有摩擦的，对落体重锤阻力最小的垂直轨道或管道加以控制。垂直管道或管道用于引导落锤沿与水平支撑表面呈 90° 落下/The test 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.		P
	接受撞击的试样，纵轴应与平坦表面平行并与横放在试样中心的直径 15.8 mm ± 0.1mm 弯曲表面的纵轴垂直;每一个试样只经受一次撞击/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.		P
38.3.4.6.3	**试验程序-挤压**（适用于棱柱形、袋装、硬币/纽扣电芯和直径小于18mm的圆柱形电池）/Test Procedure – Crush (applicable to prismatic, pouch, coin/button cells and cylindrical cells less than 18.0 mm in diameter)		N/A
	将电池或元件电池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 1.5cm/s。挤压持续进行，直到出现三种情况之一：/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.		N/A

ST/SG/AC.10/11/Rev.7/Amend1 Section 38.3			
条款 Clause	测试要求 Requirement-Test	结果评判 Result-Remark	结论 Verdict
	施加的力量达到 13 kN ± 0.78kN The applied force reaches 13 kN ± 0.78 kN;	☐Reach this condition	N/A
	电池的电压下降至少 100mV The voltage of the cell drops by at least 100 mV;	☐Reach this condition	N/A
	电池变形达原始厚度的 50%或以上/The cell is deformed by 50% or more of its original thickness.	☐Reach this condition	N/A
	每个测试的电池或元件电池只做一次挤压试验/Each test cell or component cell is to be subjected to one crush only.		N/A
	试验样品需观察 6 小时/The test samples shall be observed for a further 6h		N/A
	试验应使用之前未做过其他试验的电池或元件电池进行/The test shall be conducted using test cells or component cells that have not previously been subjected to other tests.		N/A
38.3.4.6.4	要求/ Requirement		P
	外壳温度不超过 170 °C，并且在试验过程中及试验后 6 小时内无解体、无破裂、无起火/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.	在试验过程中及试验后 6 小时内无解体、无破裂、无起火;数据见表 3 /No disassembly and no fire during the test and within six hours after this test. The data see Table 3	P
38.3.4.7	**试验 7 过度充电 /Test T.7: Overcharge**		**P**
38.3.4.7.1	目的 /Purpose		P
	本试验评估可充电电池承受过度充电状况的能力/This test evaluates the ability of a rechargeable battery to withstand an overcharge condition.		--
38.3.4.7.2	试验程序/Test procedure		P
	充电电流是制造商建议的最大持续充电电流的两倍 The charge current shall be twice the manufacturer's recommended maximum continuous charge current.	1.2A×2=2.4A	P
	试验的最小电压如下：/The minimum voltage of the test shall be as follows: a)制造商建议的充电电压不大于 18V 时，试验的最小电压是电池组最大充电电压的两倍或 22V 两者中的较小者/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.	22V	P
	b) 制造商建议的充电电压大于 18V 时，试验的最小电压应为最大充电电压的 1.2 倍/When the manufacturer's recommended charge voltage is not more than 18V,the minimum voltage of the test shall be 1.2 times the maximum charge voltage.		N/A
	试验环境温度/ Ambient temperature.	23.9℃	--
	试验的进行时间/ The duration of the test.	24h	--
38.3.4.7.3	要求 /Requirement		P
	充电电池在试验过程中和试验后 7 天内无解体，无起火/Rechargeable battery is no disassembly and no fire during the test and within seven days after the test.	试验过程中和试验后 7 天内无解体，无起火;数据见表 4/ No	P

ST/SG/AC.10/11/Rev.7/Amend1 Section 38.3			
条款 Clause	测试要求 Requirement-Test	结果评判 Result-Remark	结论 Verdict
		disassembly and no fire during the test within seven days after the test. The data see Table 4	
38.3.4.8	**试验 8 强制放电 / Test 8: Forced discharge**		**P**
38.3.4.8.1	目的 Purpose		P
	本试验评估原电池或充电电池承受强制放电状况的能力 / This test evaluates the ability of a primary or a rechargeable cell to withstand a forced discharge condition.		--
38.3.4.8.2	试验程序/Test procedure		P
	每个电池应在环境温度下与 12V 直流电电源串联在起始电流等于制造商给定的最大放电电流的条件强制放电/ Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12 V DC, power supply at an initial current equal to the maximum discharge current specified by the manufacturer.		P
	将适当大小和额定值的电阻负荷与试验电池串联，计算得给定的放电电流。对每个电池进行强制放电，放电时间（小时）应等于其额定容量迟疑初始试验电流（安培）/ 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).		P
38.3.4.8.3	要求/Requirement		P
	原电池或充电电池如在试验过程中和试验后 7 天内无解体，无起火/ Primary or rechargeable cells meet this requirement if there is no disassembly and no fire during the test within seven days after the test.	试验过程中和试验后 7 天内无解体，无起火。数据见表 5 / No disassembly and no fire during the test within seven days after the test. The data see Table 5	P

Test data:

Table 1 T.1~T.4

No.	Test before		T.1: Altitude Simulation				T.2: Thermal Test				T.3 Vibration				T.4 Shock				Result
	Mass (g)	OCV (V)	Mass (g)	OCV (V)	Mass loss (%)	Residual OCV (%)	Mass (g)	OCV (V)	Mass loss(%)	Residual OCV (%)	Mass (g)	OCV (V)	Mass loss (%)	Residual OCV (%)	Mass (g)	OCV (V)	Mass loss (%)	Residual OCV (%)	
B01#	244.393	12.43	244.365	12.42	0.011	99.92	244.321	12.27	0.018	98.79	244.319	12.26	0.001	99.92	244.319	12.26	0.000	100.00	P
B02#	244.858	12.45	244.841	12.43	0.007	99.84	244.810	12.29	0.013	98.87	244.810	12.29	0.000	100.00	244.808	12.29	0.001	100.00	P
B03#	245.171	12.53	245.151	12.50	0.008	99.76	245.114	12.36	0.015	98.88	245.112	12.35	0.001	99.92	245.112	12.35	0.000	100.00	P
B04#	244.685	12.48	244.672	12.47	0.005	99.92	244.631	12.32	0.017	98.80	244.631	12.32	0.000	100.00	244.631	12.32	0.000	100.00	P
B05#	244.746	12.51	244.720	12.48	0.011	99.76	244.675	12.30	0.018	98.56	244.673	12.29	0.001	99.92	244.671	12.28	0.001	99.92	P
B06#	245.153	12.49	245.132	12.47	0.009	99.84	245.101	12.33	0.013	98.88	245.101	12.33	0.000	100.00	245.101	12.33	0.000	100.00	P
B07#	245.149	12.47	245.120	12.46	0.012	99.92	245.090	12.29	0.012	98.64	245.088	12.28	0.001	99.92	245.088	12.28	0.000	100.00	P
B08#	244.842	12.52	244.830	12.50	0.005	99.84	244.791	12.32	0.016	98.56	244.791	12.32	0.000	100.00	244.789	12.31	0.001	99.92	P

Table 2 T.5 External short circuit			
No.	OCV (V)	Max. Temp (℃)	Result
B01#	12.26	57.6	P
B02#	12.29	57.3	P
B03#	12.35	57.4	P
B04#	12.32	57.5	P
B05#	12.28	57.3	P
B06#	12.33	57.6	P
B07#	12.28	57.4	P
B08#	12.31	57.5	P

Table 3 T.6 Impact / ~~Crush~~			
No.	OCV (V)	Max. Temp(℃)	Result
C01#	3.767	24.5	P
C02#	3.784	24.3	P
C03#	3.791	24.4	P
C04#	3.759	24.3	P
C05#	3.786	24.5	P
C06#	3.778	24.4	P
C07#	3.769	24.4	P
C08#	3.758	24.3	P
C09#	3.773	24.5	P
C10#	3.785	24.3	P

Table 4 T.7 Overcharge					
No.	Max. Temp (℃)	Result	No.	Max. Temp (℃)	Result
B09#	24.1	P	B13#	23.9	P
B10#	23.9	P	B14#	24.2	P
B11#	24.2	P	B15#	24.1	P
B12#	24.1	P	B16#	23.9	P

Table 5 T.8 Forced discharge					
No.	OCV (V)	Result	No.	OCV (V)	Result
C11#	3.264	P	C21#	3.259	P
C12#	3.255	P	C22#	3.247	P
C13#	3.241	P	C23#	3.261	P
C14#	3.262	P	C24#	3.249	P
C15#	3.257	P	C25#	3.253	P
C16#	3.239	P	C26#	3.262	P
C17#	3.249	P	C27#	3.258	P
C18#	3.246	P	C28#	3.247	P
C19#	3.258	P	C29#	3.254	P
C20#	3.263	P	C30#	3.242	P

Photos



Photo 1



Photo 2

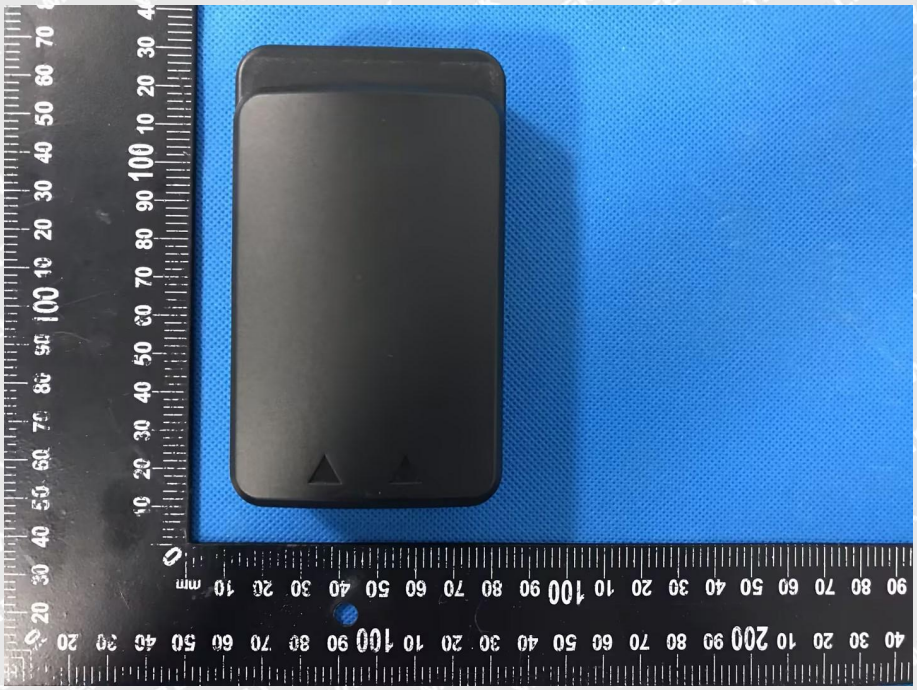


Photo 3



Photo 4

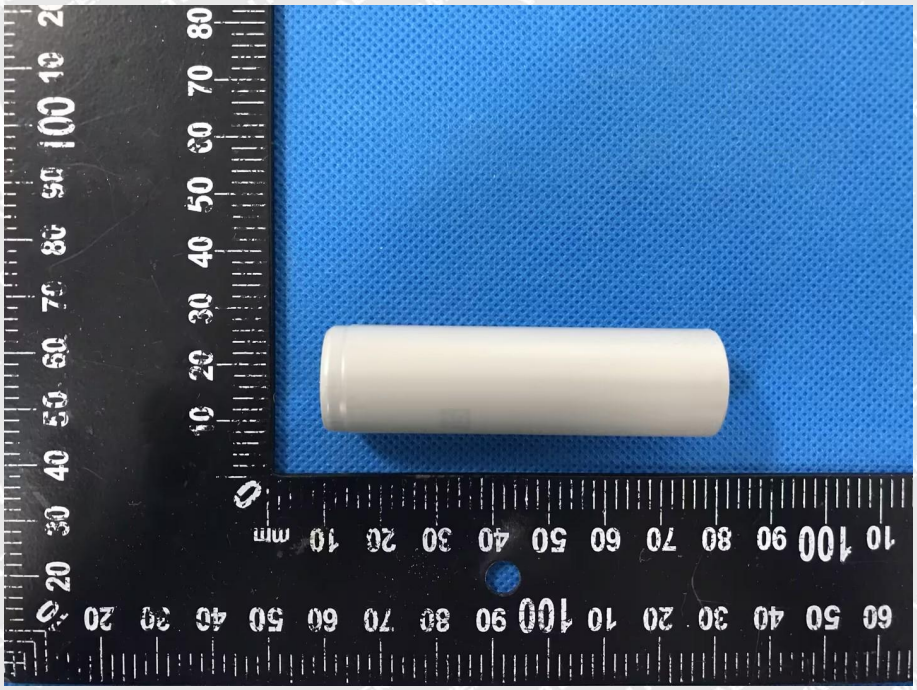


Photo 5

====== End of Report ======