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检测
TESTING
CNAS L4065

Report No.:
WHFAT20200120U01

TEST REPORT
检测报告

NAME OF SAMPLE 产品名称	Lithium Thionyl Chloride Battery 锂-亚硫酰氯电池
Model and parameters 型号参数	ER14505M 3.6V 2100mAh
CLASSIFICATION OF TEST 检测类别	Commission test 委托检测
Issue Date 签发日期	2020.3.30

测试 Tested by	审核 Reviewed by	批准 Approved by
Zhuo hui He Test Engineer	Audit Engineer	Hongbin Xu Approval Engineer

广州邦禾检测技术有限公司
Guangzhou MCM Certification & Testing Co., Ltd.

Test Information 测试信息	
Application/申请单位:	
Applicant 申请单位	WUHAN FANSO TECHNOLOGY CO., LTD 武汉孚安特科技有限公司
Address 申请单位地址	No.1 Sitai Industrial Park, Yongfeng Avenue, Hanyang District, Wuhan City, China. 武汉市汉阳区永丰街四台工业园特 1 号
Contact information 联系方式	Tel: 18627884463 E-mail: 4458879476@qq.com
General information/基本信息:	
Test item description 产品名称	Lithium Thionyl Chloride Battery 锂-亚硫酰氯电池
Classification 产品分类	Lithium metal cell, primary 锂金属电芯，不可充电
Trade Mark 商标名称	FANSO
Model and parameters 型号参数	ER14505M 3.6V 2100mAh (Lithium content: 0.6g)
Manufacturer 制造单位	WUHAN FANSO TECHNOLOGY CO., LTD 武汉孚安特科技有限公司
Address 制造单位地址	No.1 Sitai Industrial Park, Yongfeng Avenue, Hanyang District, Wuhan City, China. 武汉市汉阳区永丰街四台工业园特 1 号
Factory 生产单位	WUHAN FANSO TECHNOLOGY CO., LTD 武汉孚安特科技有限公司
Address 生产单位地址	No.1 Sitai Industrial Park, Yongfeng Avenue, Hanyang District, Wuhan City, China. 武汉市汉阳区永丰街四台工业园特 1 号
Testing laboratory/测试实验室:	
Laboratory 测试单位	Guangzhou MCM Certification & Testing Co., Ltd. 广州邦禾检测技术有限公司
Address 测试单位地址	1 F No.13, Zhong San Section, ShiGuang Road, Panyu District, Guangzhou City, Guangdong Province, China. 中国 广州市番禺区市广路钟三路段 13 号之一
Testing Location 测试实验室地址	As above 同上
Test Specification/测试标准:	
Standard 测试标准	UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6, amend1, 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, amend1, section 38.3.
Procedure deviation 过程偏差	■ None ☐ 38.3.3 (f) ☐ 38.3.3 (g)
Receiving Date 样品接收日期	2020.01.20

General product information 一般产品信息：

The cell consists of the positive electrode plate, negative electrode plate, separator, electrolyte and case. The positive and negative electrode plates are housed in the case in the state being separated by the separator.
电芯由正极、负极、隔膜、电解液和外壳组成，正负极在封装前被隔膜所隔离。

Label 标签:

Technology Information 技术参数:

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 放电截至电压
	(mAh)	(V)	(mA)	(mA)	(mA)	(mA)	(V)	(V)
Cell 电芯								
ER14505M	2100	3.6	/	5.0	/	2100	/	3.0

Remark 备注：

/

Test Conclusion 测试结论				
Clause 条款	**Test item 测试项目**	**Test Sample 测试样品**	**Test Result 测试结论**	**Remark 备注**
38.3.4.1	Altitude simulation 高度模拟	C1#-C20#	P	/
38.3.4.2	Thermal test 温度循环测试		P	/
38.3.4.3	Vibration 振动		P	/
38.3.4.4	Shock 冲击		P	/
38.3.4.5	External short circuit 外部短路		P	/
38.3.4.6	Impact 重物冲击	/	N/A	/
	Crush 挤压	C21#-C30#	P	/
38.3.4.7	Overcharge 过充电	/	N/A	/
38.3.4.8	Forced discharge 强制放电	C31#-C40#	P	/
Remark /备注: P 表示 Pass，合格；F 表示 Failed，失败；N/A 表示 Not apply，不适用				
Test Environment Condition: 试验环境条件：		Ambient Temperature: 20± 5°C 环境温度：20± 5°C		
Test Date: 测试日期		2020.01.20 - 2020.02.05		

Test conclusion:

The Lithium Thionyl Chloride Batteries submitted by WUHAN FANSO TECHNOLOGY CO., LTD have passed the test items of UNITED NATIONS" Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria ST/SG/AC.10/11/Rev.6, amend1, section 38.3.

测试结论：

由武汉孚安特科技有限公司送检的锂-亚硫酰氯电池符合联合国《关于危险品货物运输的建议书试验和标准手册》ST/SG/AC.10/11/Rev.6,amend1,section 38.3 的要求。

UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6, amend1, 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, amend1, section 38.3.			
Clause	**Requirements**	**Result**	**Verdict**
38.3.1	**Scope** 范围		**P**
	This section presents the procedures to be followed for the classification of lithium metal and lithium ion cells and batteries (see UN Nos 3090, 3091, 3480 and 3481, and the applicable special provisions of Chapter 3.3 of the Model Regulations. 本节介绍了锂金属/离子电芯/电池分类（见 UN3090、3091、3480 和 3481）应遵循《规章范本》第 3.3 章适用的特殊条款。		P
38.3.3	When a cell or battery type is to be under this sub-section. The number and condition of cell and batteries of each type to be tested are as follows test item. 当一个电芯或电池型号须根据本分节进行试验时，试验的每个型号电芯和电池的数量和条件如测试项所示。	Shown as below 如下所示	**P**
	Sample quality(average value, approximate) 样品质量（平均值，近似）	17.5g	—
	Large/small cell/battery 大/小 电芯/电池	Small cell 小电芯	—
38.3.3(f)	When testing a battery assembly in which the aggregate lithium content of all anodes when fully charged, is not more than 500 g, or in the case of a lithium battery, with a Watt-hour rating of not more than 6 200Wh, that is assembled from batteries that have passed all applicable tests, one assembled battery in a fully charged state shall be tested under tests T3, T4 and T5, and in addition, test T7 in the case of a rechargeable battery. 对于在完全充电时所有阳极的总锂含量不超过 500g，或额定功率不超过 6200Wh 的锂电池组（其由通过所有适用测试的电池组成），应对一个完全充电/满电状态的电池组加测 T3、T4 和 T5，另外，如果是可充电电池，则还需加测 T7。		N/A
38.3.3(g)	When batteries that have passed all applicable tests are electrically connected to form battery in which the aggregate lithium content of all anodes, when fully charged more than 500g, or in the case of a lithium ion battery, with a Watt-hour rating of more than 6 200Wh, the assembled battery does not need to be tested if the assembled battery is of a type that has been verified as preventing: - Overcharge; - Short circuits; and - Over discharge between the batteries 对于在完全充电时所有阳极的总锂含量超过 500g，或额定功率超过 6200Wh 的锂电池组（其由通过所有适用测试的电池组成），当存在一种保护可以预防以下情况发生时，可以不需要进行加测： - 过充； - 短路；且 - 电池之间的过放		N/A

UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6, amend1, 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, amend1, section 38.3.			
Clause	**Requirements**	**Result**	**Verdict**
38.3.4.1	**Altitude simulation 高度模拟**		**P**
	Test simples shall be stored at a pressure of 11.6kPa or less for at least six hour at ambient temperature (20±5℃). 试验电芯和电池在环境温度(20±5℃)下，储存在小于等于 11.6kPa 的压力下至少 6 小时。		P
	Results: no leakage, no venting, no disassembly, no rupture, no fire, and the open circuit voltage drop not less than 90%. The requirement relating to voltage is not applicable to test cells and batteries at fully discharge states. 试验结果：无泄漏、无排气、无解体、无破裂、无着火和开路电压降不低于 90%。 测试电压的要求不适用于完全放电的电芯和电池。	See the TABLE: 38.3.4.1	P
38.3.4.2	**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 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). For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12hours 将电芯和电池在温度为 72±2°C 的条件下贮存不少于 6 个小时；然后，在温度-40±2°C 条件下贮存不少于 6 个小时；两个温度间的间隔最长为 30min,重复操作上述步骤到 10 次；然后，在环境温度为 20±5°C 的条件下放置 24 个小时。大电芯和电池储存时间至少 12h。	Stored for 6h at 72±2℃ and -40 ±2℃	P
	Results: no leakage, no venting, no disassembly, no rupture, no fire, and the open circuit voltage drop not less than 90%. The requirement relating to voltage is not applicable to test cells and batteries at fully discharge states. 试验结果：无泄漏、无排气、无解体、无破裂、无着火和开路电压降不低于 90%。 测试电压的要求不适用于完全放电的电芯和电池。	See the TABLE: 38.3.4.2	P
38.3.4.3	**Vibration 振动**		**P**

UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6, amend1, 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, amend1, section 38.3.			
Clause	**Requirements**	**Result**	**Verdict**
	Cells and batteries 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 wave form 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. 电芯和电池牢固地固定在振动机器的平台上，而不会使电芯变形，从而如实地传递振动。振动以正弦波形式进行，在 7Hz 和 200Hz 之间进行对数扫描，并在 15 分钟内返回至 7Hz。每个电芯和电池从三个互相垂直的方向上循环 12 次，3 个小时。振动方向之一必须垂直于终端面。		P
	For cells and small batteries: from 7 Hz a peak acceleration of 1gn is maintained until 18 Hz reached. The amplitude is then maintained at 0.8mm (1.6mm 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. 对于电芯和小电池：保持峰值加速度 1gn，从 7Hz 到 18Hz。然后振幅保持在 0.8mm（总偏移量为 1.6mm），增加频率，直到峰值加速度达到 8gn（约 50Hz）。然后保持 8gn 的峰值加速度，直到频率增加到 200Hz。		P
	For large batteries: from 7 Hz to a peak acceleration of 1gn is maintained until 18 Hz reached. The amplitude is then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 2gn occurs (approximately 25 HZ). A peak acceleration of 2gn is then maintained until the frequency is increased to 200 Hz. 对于大电池：保持峰值加速度 1gn，从 7Hz 到 18Hz。然后振幅保持在 0.8mm（总偏移量为 1.6mm），增加频率，直到峰值加速度达到 2gn（约 25Hz）。然后保持 2gn 的峰值加速度，直到频率增加到 200Hz。		N/A
	Results: no leakage, no venting, no disassembly, no rupture, no fire, and the open circuit voltage drop not less than 90%. The requirement relating to voltage is not applicable to test cells and batteries at fully discharge states. 试验结果：无泄漏、无排气、无解体、无破裂、无着火和开路电压降不低于 90%。 测试电压的要求不适用于完全放电的电芯和电池。	See the TABLE: 38.3.4.3	P
38.3.4.4	**Shock 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. 试验电芯和电池应通过刚性支架固定在试验机上，该支架将支撑每个试验电池的所有安装面。		P

UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6, amend1, 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, amend1, section 38.3.

Clause	Requirements	Result	Verdict
	Each cell shall be subjected to a half-sine shock of peak acceleration of 150gn and pulse duration of 6 milliseconds. Alternatively, large cells may be subjected to a half-sine shock of peak acceleration of 50gn and pulse duration of 11 milliseconds. 每个电芯应承受峰值加速度为 150gn、脉宽为 6 毫秒的半正弦冲击。或者，大电芯可能受到峰值加速度为 50gn、脉宽为 11 毫秒的半正弦冲击。		P
	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 每个电池应承受的峰值加速度取决于电池的质量。小电池的脉宽应为 6 毫秒，大电池的脉宽应为 11 毫秒。以下公式用于计算适当的最小峰值加速度。		N/A

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

[a] Mass is expressed in kilograms.

	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. 每一个电芯或电池在安装位置的 3 个垂直的轴向的正方向和负方向各进行 3 次冲击，总共 18 次。		P
	Results: no leakage, no venting, no disassembly, no rupture, no fire, and the open circuit voltage drop not less than 90%. The requirement relating to voltage is not applicable to test cells and batteries at fully discharge states. 试验结果：无泄漏、无排气、无解体、无破裂、无着火和开路电压降不低于 90%。 测试电压的要求不适用于完全放电的电芯和电池。	See the TABLE: 38.3.4.4	P
38.3.4.5	**External short circuit 外部短路**		**P**

UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6, amend1, 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, amend1, section 38.3.			
Clause	**Requirements**	**Result**	**Verdict**
	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. 待测电芯或电池应加热一段时间，以稳定均衡在 57±4°C 的温度，并测量外壳上的温度。加热时间取决于电芯或电池的尺寸和设计，应进行评估和记录：如果评估不可行，小电芯或小电池的暴露/加热时间应至少为 6 小时，大电芯或大电池的暴露/加热时间应至少为 12 小时。然后，在 57±4°C 下的电芯或电池应经受一次短路，总外部电阻小于 0.1 欧姆。		P
	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. 在电芯或电池外部外壳温度恢复到 57±4°C 后，短路状态继续持续至少一小时，或对于大电池的情况下，降低至试验期间观察到的最大温升的一半，并保持在该值以下。		P
	The short circuit and cooling down phases shall be conducted at least at ambient temperature. 短路和冷却阶段应至少在环境温度下进行。		P
	Results: 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. 试验结果：外部温度不超过 170°C，试验期间和试验后 6 小时内，无解体、破裂或起火现象。	See the TABLE: 38.3.4.5	P
38.3.4.6	**Test T.6: Impact 重物冲击/Crush 挤压**		**P**
38.3.4.6.2	Impact 重物冲击		**N/A**
	Applicable to cylindrical cells not less than 18.0 mm in diameter 适用于直径不小于 18.0 mm 的圆柱型电芯		—

UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6, amend1, 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, amend1, section 38.3.			
Clause	**Requirements**	**Result**	**Verdict**
	The test cell is placed on a flat smooth surface. A stainless steel bar (type 316 or equivalent) (Ø 15.8 mm ±0.1mm, length: ≥60 mm or of the longest dimension of the cell, whichever is greater) is placed across the centre of the test sample. A mass of 9.1 kg ±0.1 kg is dropped from a height of 61cm± 2.5cm at the intersection of the bar and the test 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. 测试电芯被放置平坦表面上。一根直径为 15.8± 0.1 毫米，长度至少 6 厘米（或该电芯的最大尺寸，以较大者为准）的 316 型不锈钢棒横放在样品的中心。一个重达 9.1 ± 0.1 千克的铁锤从 61±2.5 厘米高处以几乎无摩擦和零拉力的姿态沿垂直轨道或通道跌落至不锈钢棒与样品的交结点上。用以引导跌落的垂直轨道或通道应与水平支撑面形 90° 。		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 steel bar lying across the centre of the test sample. Each sample is to be subjected to only a single impact 被撞击的测试样品的长轴平行于平面，并与横放在样品中心的不锈钢棒垂直，每只样品只经受一次撞击。		N/A
38.3.4.6.3	Crush 挤压		**P**
	Applicable to prismatic, pouch, coin/button cells and cylindrical cells less than 18.0 mm in diameter 适用于棱柱形、袋形、硬币/纽扣式电池和直径小于 18.0 mm 的圆柱型电芯。		—
	A cell or component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5cm/s at the first point of contact. 在两个平面间对电芯或元件电芯进行挤压，挤压在第一个接触点的速度约为 1.5cm/s 。		P
	The crushing is to be continued until the first of the three options below is reached. (a) The applied force reaches 13kN±0.78kN; (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 100mV or more, or the cell is deformed by at least 50% of its original thickness, the pressure shall be released. 直到发生下述三个条件中的任一条件： (a) 作用力达到 13kN±0.78kN; (b) 电芯电压下降至少 100mV； 或 (c) 电芯厚度和最初比较变形 50%以上。 一旦达到最大压力，电压降超过 100 mV 或者电芯变形至少 50%，压力应该解除。		P

UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6, amend1, 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, amend1, section 38.3.

Clause	Requirements	Result	Verdict
	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 surface. For cylindrical cells, the crush force shall be applied perpendicular to longitudinal axis. 棱形或袋装电芯应该在宽面施加挤压力，纽扣/硬币电芯应该在平面施加挤压力。圆柱型电芯应该在长轴的垂直方向施加挤压力。		P
	Each test cell or component cell is to be subjected to one crushed only. The test sample shall be observed for a further 6h. The test shall be conducted using test cell or component cells that have not previously been subjected to others tests. 每一个测试的电芯或元件电芯只进行一次挤压，测试后再观察6h. 用于测试的电芯或元件电芯之前没有进行过其它的测试。		P
38.3.4.6.4	Result of Impact/Crush 重物冲击/挤压的结论		**P**
	Results: 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 试验结果：外部温度不超过 170°C，试验期间和试验后 6 小时内，无解体或起火现象。	See the TABLE: 38.3.4.6	P
38.3.4.7	**Overcharge 过充电**		**N/A**
	Applicable to rechargeable lithium cell/battery with overcharge protection. 适用于具有过充电保护功能的可充电锂电芯/电池。		—
	The charge current shall be twice the manufacturers' recommended maximum continuous charge current. 充电电流应为制造商推荐的最大持续充电电流的两倍。		N/A
	The minimum voltage of the test shall be as follows. 试验的最小电压如下。		N/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. 制造商建议的充电电压不大于 18 伏时，实验的最小电压应是电池组最大充电电压的两倍或 22 伏两者中的较小者。		N/A
	When the manufacturer's recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times maximum charge voltage. 制造商建议的充电电压大于 18 伏时，实验的最小电压应是最大充电电压的 1.2 倍。		N/A
	Tests are to be at ambient temperature. The duration of the test shall be 24 hours 测试在室温下进行，测试时间为 24h.		N/A
	Results: there is no disassembly and no fire during the test and within seven days after this test 试验结果：试验期间和试验后 7 天内，无解体或起火现象。	See the TABLE: 38.3.4.7	N/A
38.3.4.8	**Forced discharge 强制放电**		**P**

UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6, amend1, 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, amend1, section 38.3.			
Clause	**Requirements**	**Result**	**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. 在环境温度下，将单个电芯连接在 12V 的直流电源上进行强制放电，此直流电源提供给每个电芯的初始电流为制造厂指定的最大放电电流。		P
	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适当大小的阻性电子负载与电芯串联获得，电芯强制放电的时间为额定容量除以初始电流。		P
	Results: there is no disassembly and no fire during the test and within seven days after this test 试验结果：试验期间和试验后 7 天，无解体或起火现象。	See the TABLE: 38.3.4.8	P

TABLE: 38.3.4.1 Altitude simulation 高度模拟							Pass
MODEL	Before test		After test		Mass loss (%)	Residual OCV (%)	Results
	Mass(g)	OCV(V)	Mass(g)	OCV(V)			
Undischarged							
C1#	17.393	3.655	17.391	3.653	0.011	99.95	Pass
C2#	17.831	3.649	17.830	3.648	0.006	99.97	Pass
C3#	17.386	3.657	17.384	3.656	0.012	99.97	Pass
C4#	17.404	3.649	17.403	3.648	0.006	99.97	Pass
C5#	17.420	3.649	17.418	3.649	0.011	100.00	Pass
C6#	17.538	3.653	17.538	3.652	0.000	99.97	Pass
C7#	17.721	3.651	17.720	3.648	0.006	99.92	Pass
C8#	17.405	3.657	17.404	3.647	0.006	99.73	Pass
C9#	17.746	3.645	17.744	3.645	0.011	100.00	Pass
C10#	17.689	3.656	17.688	3.656	0.006	100.00	Pass
Fully discharged							
C11#	17.565	/	17.565	/	0.000	/	Pass
C12#	17.398	/	17.398	/	0.000	/	Pass
C13#	17.618	/	17.618	/	0.000	/	Pass
C14#	17.456	/	17.456	/	0.000	/	Pass
C15#	17.480	/	17.477	/	0.017	/	Pass
C16#	17.406	/	17.404	/	0.011	/	Pass
C17#	17.457	/	17.453	/	0.023	/	Pass
C18#	17.648	/	17.647	/	0.006	/	Pass
C19#	17.587	/	17.585	/	0.011	/	Pass
C20#	17.557	/	17.556	/	0.006	/	Pass
Results: Pass = no leakage, no venting, no disassembly, no rupture, no fire, and the open circuit voltage drop not less than 90%							

TABLE: 38.3.4.2 Thermal test 温度试验							Pass
MODEL	Before test		After test		Mass loss (%)	Residual OCV (%)	Results
	Mass(g)	OCV(V)	Mass(g)	OCV(V)			
Undischarged							
C1#	17.391	3.653	17.387	3.683	0.023	100.82	Pass
C2#	17.830	3.648	17.826	3.669	0.022	100.58	Pass
C3#	17.384	3.656	17.382	3.676	0.012	100.55	Pass
C4#	17.403	3.648	17.399	3.674	0.023	100.71	Pass
C5#	17.418	3.649	17.415	3.686	0.017	101.01	Pass
C6#	17.538	3.652	17.531	3.674	0.040	100.60	Pass
C7#	17.720	3.648	17.716	3.682	0.023	100.93	Pass
C8#	17.404	3.647	17.400	3.672	0.023	100.69	Pass
C9#	17.744	3.645	17.741	3.684	0.017	101.07	Pass
C10#	17.688	3.656	17.685	3.674	0.017	100.49	Pass
Fully discharged							
C11#	17.565	/	17.562	/	0.017	/	Pass
C12#	17.398	/	17.396	/	0.011	/	Pass
C13#	17.618	/	17.616	/	0.011	/	Pass
C14#	17.456	/	17.454	/	0.011	/	Pass
C15#	17.477	/	17.482	/	0.000	/	Pass
C16#	17.404	/	17.401	/	0.017	/	Pass
C17#	17.453	/	17.452	/	0.006	/	Pass
C18#	17.647	/	17.643	/	0.023	/	Pass
C19#	17.585	/	17.581	/	0.023	/	Pass
C20#	17.556	/	17.553	/	0.017	/	Pass
Results: Pass = no leakage, no venting, no disassembly, no rupture, no fire, and the open circuit voltage drop not less than 90%							

TABLE: 38.3.4.3 Vibration 振动							Pass
MODEL	Before test		After test		Mass loss (%)	Residual OCV (%)	Results
	Mass(g)	OCV(V)	Mass(g)	OCV(V)			
Undischarged							
C1#	17.387	3.683	17.387	3.683	0.000	100.00	Pass
C2#	17.826	3.669	17.826	3.668	0.000	99.97	Pass
C3#	17.382	3.676	17.381	3.676	0.006	100.00	Pass
C4#	17.399	3.674	17.398	3.670	0.006	99.89	Pass
C5#	17.415	3.686	17.413	3.683	0.011	99.92	Pass
C6#	17.531	3.674	17.531	3.674	0.000	100.00	Pass
C7#	17.716	3.682	17.716	3.680	0.000	99.95	Pass
C8#	17.400	3.672	17.400	3.671	0.000	99.97	Pass
C9#	17.741	3.684	17.740	3.684	0.006	100.00	Pass
C10#	17.685	3.674	17.684	3.674	0.006	100.00	Pass
Fully discharged							
C11#	17.562	/	17.562	/	0.000	/	Pass
C12#	17.396	/	17.395	/	0.006	/	Pass
C13#	17.616	/	17.616	/	0.000	/	Pass
C14#	17.454	/	17.454	/	0.000	/	Pass
C15#	17.482	/	17.470	/	0.069	/	Pass
C16#	17.401	/	17.400	/	0.006	/	Pass
C17#	17.452	/	17.450	/	0.011	/	Pass
C18#	17.643	/	17.642	/	0.006	/	Pass
C19#	17.581	/	17.581	/	0.000	/	Pass
C20#	17.553	/	17.553	/	0.000	/	Pass
Results: Pass = no leakage, no venting, no disassembly, no rupture, no fire, and the open circuit voltage drop not less than 90%							

TABLE: 38.3.4.4 Shock 冲击							Pass
MODEL	Before test		After test		Mass loss (%)	Residual OCV (%)	Results
	Mass(g)	OCV(V)	Mass(g)	OCV(V)			
Undischarged							
C1#	17.387	3.683	17.387	3.683	0.000	100.00	Pass
C2#	17.826	3.668	17.825	3.665	0.006	99.92	Pass
C3#	17.381	3.676	17.380	3.675	0.006	99.97	Pass
C4#	17.398	3.670	17.398	3.670	0.000	100.00	Pass
C5#	17.413	3.683	17.413	3.680	0.000	99.92	Pass
C6#	17.531	3.674	17.531	3.674	0.000	100.00	Pass
C7#	17.716	3.680	17.715	3.681	0.006	100.03	Pass
C8#	17.400	3.671	17.400	3.671	0.000	100.00	Pass
C9#	17.740	3.684	17.740	3.680	0.000	99.89	Pass
C10#	17.684	3.674	17.683	3.674	0.006	100.00	Pass
Fully discharged							
C11#	17.562	/	17.562	/	0.000	/	Pass
C12#	17.395	/	17.395	/	0.000	/	Pass
C13#	17.616	/	17.615	/	0.006	/	Pass
C14#	17.454	/	17.452	/	0.011	/	Pass
C15#	17.470	/	17.468	/	0.011	/	Pass
C16#	17.400	/	17.400	/	0.000	/	Pass
C17#	17.450	/	17.448	/	0.011	/	Pass
C18#	17.642	/	17.640	/	0.011	/	Pass
C19#	17.581	/	17.580	/	0.006	/	Pass
C20#	17.553	/	17.551	/	0.011	/	Pass
Results: Pass = no leakage, no venting, no disassembly, no rupture, no fire, and the open circuit voltage drop not less than 90%							

TABLE: 38.3.4.5 External Short-circuit 外部短路				Pass
MODEL	Ambient(°C) (At 57± 4°C)	Testing resistance (mΩ)	Max. External Temperature(°C)	Results
Undischarged				
C1#	57.3	83.1	86.5	Pass
C2#	57.3	85.8	71.5	Pass
C3#	57.3	80.5	73.8	Pass
C4#	57.3	82.3	71.2	Pass
C5#	57.3	83.1	80.1	Pass
C6#	57.3	82.9	73.5	Pass
C7#	57.3	84.5	75.9	Pass
C8#	57.3	83.3	78.8	Pass
C9#	57.3	81.4	80.3	Pass
C10#	57.3	86.7	75.1	Pass
Fully discharged				
C11#	57.5	83.1	61.3	Pass
C12#	57.5	85.8	60.9	Pass
C13#	57.5	80.5	60.2	Pass
C14#	57.5	82.3	61.6	Pass
C15#	57.5	83.1	59.9	Pass
C16#	57.5	82.9	60.3	Pass
C17#	57.5	84.5	59.1	Pass
C18#	57.5	83.3	60.3	Pass
C19#	57.5	81.4	59.6	Pass
C20#	57.5	86.7	60.1	Pass
Results: Pass = no disassembly, no rupture, no fire during the test and within six hours after the test.				

TABLE: 38.3.4.6 Impact 重物冲击					N/A
TABLE: 38.3.4.6 Crush 挤压					Pass
MODEL	Max. External Temperature(°C)	Results	MODEL	Max. External Temperature(°C)	Results
Undischarged			Fully discharged		
C21#	34.8	Pass	C26#	33.5	Pass
C22#	36.2	Pass	C27#	30.4	Pass
C23#	34.5	Pass	C28#	32.3	Pass
C24#	36.3	Pass	C29#	31.0	Pass
C25#	34.2	Pass	C30#	30.8	Pass
Results: Pass = no disassembly, no fire during the test and within six hours after this test.					

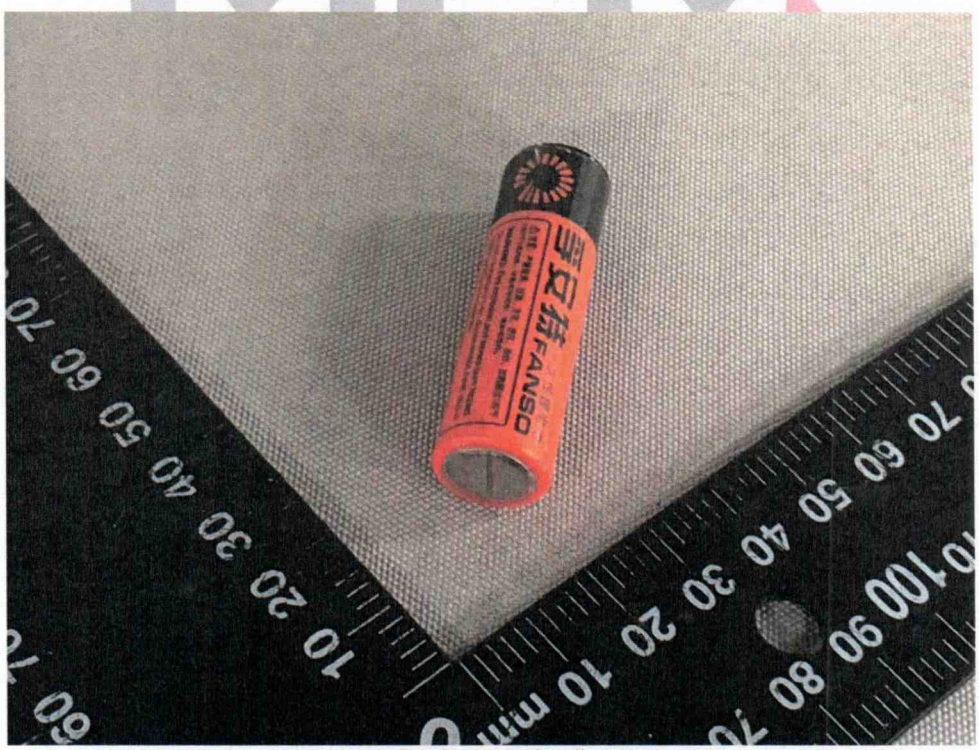
TABLE: 38.3.4.7 Overcharge 过度充电					N/A
The test current = /					-
The test voltage = /					-
MODEL	OCV(V)	Results	MODEL	OCV(V)	Results
/			/		
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/
Results: Pass = no disassembly, no fire during the test and within seven days after this test.					

TABLE: 38.3.4.8 Forced discharge 强制放电					Pass
MODEL	OCV(V)	Results	MODEL	OCV(V)	Results
Fully discharged			Fully discharged		
C31#	3.655	Pass	C36#	3.653	Pass
C32#	3.649	Pass	C37#	3.655	Pass
C33#	3.657	Pass	C38#	3.649	Pass
C34#	3.649	Pass	C39#	3.657	Pass
C35#	3.649	Pass	C40#	3.657	Pass
Results: Pass = no disassembly, no fire during the test and within seven days after this test.					

Photos of samples

样品照片

Front view of cell



Back view of cell

-- End of Report –

注 意 事 项
Important

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