



中国认可
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检测
TESTING
CNAS L7049



230020343561



检测报告

Test Report

样品名称: 锂离子电池组/二次锂电池组

Name of Sample Rechargeable Li-ion Battery

委托单位: 重庆冠宇电池有限公司

Client Chongqing CosMX Battery Co., Ltd.

报告编号: DGT2295ST6000282P

Report No.

签发日期: 2025-10-16

Issued Date



中国民用航空总局第二研究所

The Second Research Institute of CAAC



声明

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- 6、本报告结果仅对来样负责；

The test report is valid for the tested samples only.

- 7、委托样品保存期限为 12 个月，超过此限，本机构不再留存样品。

The retention period of sample is 12 month, beyond which the agency will not retain sample.

地址 (Add): 成都双流西航港经济开发区腾飞路 765 号

No.765, Tengfei Road, Xihanggang Economic Development Zone, Shuangliu, Chengdu, Sichuan,
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邮政编码(Postcode): 610211

报告查询网址: <http://service.caacdgt.com>

基本信息 General Information					
样品信息/Sample information					
样品名称 Sample Name	锂离子电池组/二次锂电池组 Rechargeable Li-ion Battery		样品类型 Sample Type	锂离子电池 Li-ion battery	
样品型号 Sample Model	BLPE01		标称电压 Nominal Voltage	3.92Vdc	
额定容量 Rated Capacity	6345mAh 24.88Wh (Rated) 6500mAh 25.48Wh (Typical)		锂金属含量 Metal Content	不适用 N/A	
样品质量 Mass	约 84.2g App.84.2g		样品描述 Description	银色, 棱柱形 Silver, Prismatic	
委托单位信息/ Client information					
委托单位 Client	重庆冠宇电池有限公司 Chongqing CosMX Battery Co., Ltd.				
单位地址 Client Address	重庆市万盛区龙门路 79 号附 5 号 No. 5, No. 79, Longmen Road, Wansheng Economic Development Zone, Chongqing, P. R. China				
生产单位信息/Manufacture information					
电芯生产单位 Cell Manufacture	重庆冠宇电池有限公司 Chongqing CosMX Battery Co., Ltd.				
地址 Address	重庆市万盛经开区福耀路 115 号附 2,3,6,7,8,9 号 No.2,3,6,7,8,9, No.115, Fuyao Road, Wansheng Economic Development Zone, Chongqing, P.R. China				
电话 Tel	0756-6331739	邮箱 E-mail	cosmxpce@cosmx.com	网站 Website	http://www.cosmx.com/
电池生产单位 Battery Manufacture	重庆冠宇电池有限公司 Chongqing CosMX Battery Co., Ltd.				
地址 Address	重庆市万盛区龙门路 79 号附 5 号 No. 5, No. 79, Longmen Road, Wansheng Economic Development Zone, Chongqing, P. R. China				
电话 Tel	0756-6331739	邮箱 E-mail	cosmxpce@cosmx.com	网站 Website	http://www.cosmx.com/
*以上信息由委托单位提供。 The above information is provided by client.					
测试机构信息/Test Laboratory					
检测单位 Laboratory	中国民用航空总局第二研究所 The Second Research Institute of CAAC				
地址 Address	成都双流西航港经济开发区腾飞路 765 号 No.765, Tengfei Road, Xihanggang Economic Development Zone, Shuangliu, Chengdu, Sichuan, P. R. China				
电话 Tel	028-64458155	邮箱 E-mail	yanghengjin@caacsri.com	网站 Website	www.caacdgt.com
样品数量 Quantity of Sample	16 个电池 30 个电芯 16lithium ion batteries, 30 cells				

测试结论 Test Conclusion					
序号 No.	测试项目名称 Name of Test	测试标准 Testing Standard	测试结果 Test Result	结论 Conclusion	备注 Remarks
1	高度模拟 Altitude simulation	联合国《试验和标准手册》第8 修订版 38.3 节 UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev8,Section 38.3	见附表 1 Appendix 1	合格 Passed	/
2	温度试验 Thermal test		见附表 2 Appendix 2	合格 Passed	/
3	振动 Vibration		见附表 3 Appendix 3	合格 Passed	/
4	冲击 Shock		见附表 4 Appendix 4	合格 Passed	/
5	外部短路 External Short-circuit		见附表 5 Appendix 5	合格 Passed	/
6	撞击 Impact		/	/	不适用 N/A
	挤压 Crush		见附表 6 Appendix 6	合格 Passed	/
7	过度充电 Overcharge		见附表 7 Appendix 7	合格 Passed	/
8	强制放电 Forced discharge	见附表 8 Appendix 8	合格 Passed	/	
接样日期 Receiving Date		2025-09-16			
测试日期 Test Date		2025-09-17~2025-10-14			
/					
结论/Conclusion:					
经测试，送检样品符合联合国《试验和标准手册》第8 修订版第 38.3 节的测试要求。 The sample had passed the test items of UNITED NATIONS, Manual of Tests and Criteria ST/SG/AC.10/11/Rev.8,Section 38.3.					
检测单位盖章(Stamp) 签发日期(Issued Date): 2025-10-16					

检测:

(Compiled by)

罗子豪

审核:

(Checked by)

李世武

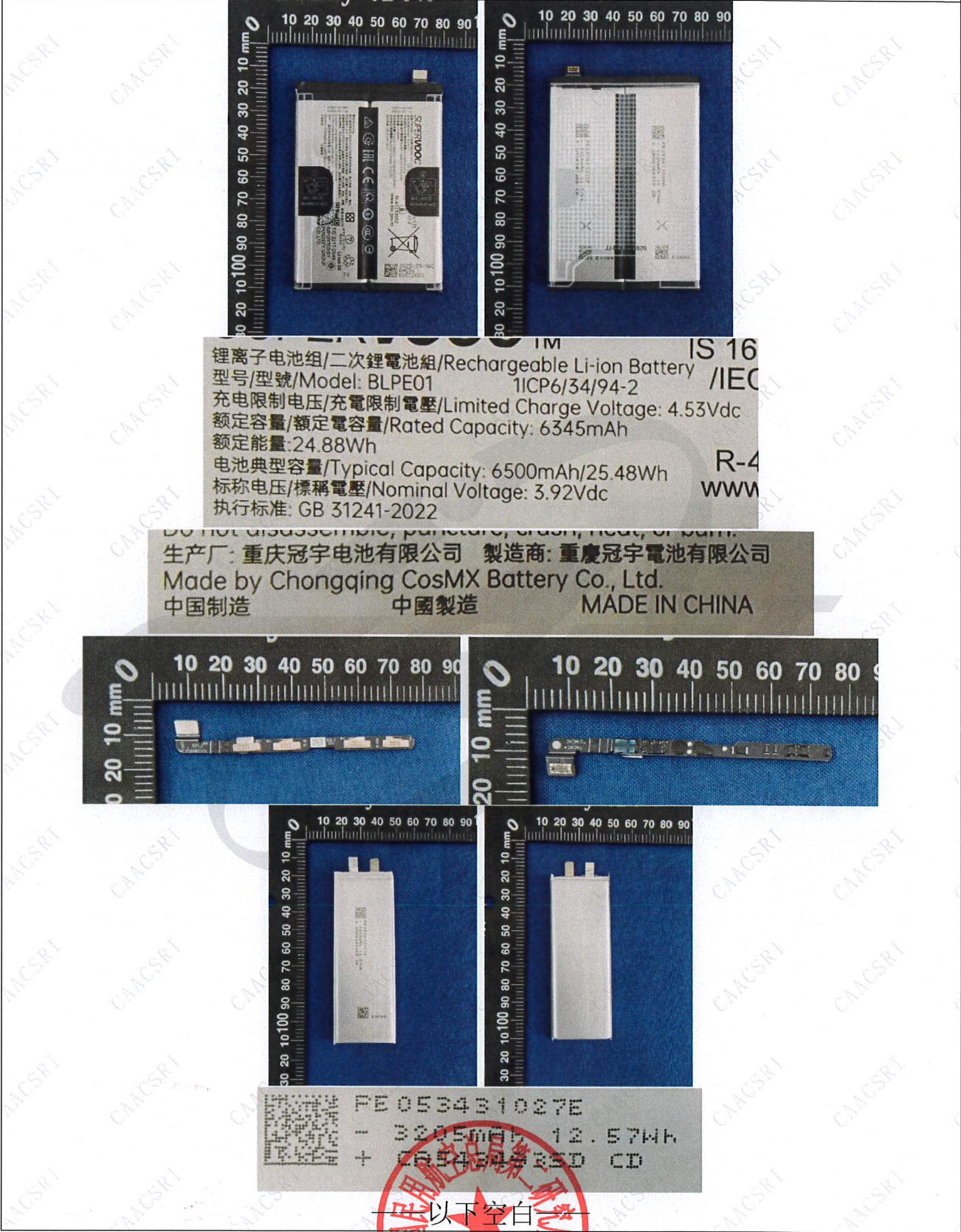
批准:

(Approved by)



韩一春

样品及标识照片
Photos of samples and markings



附表 1

测试项目 Test Items	高度模拟 Altitude simulation						
1.1	测试步骤 Test procedure 试验电池芯和电池在环境温度(20±5℃)下，储存在小于等于 11.6kPa 的压力下至少六小时。 Test cells and batteries shall be stored at a pressure of 11.6kPa or less for at least six hours at ambient temperature (20±5℃).						
1.2	样品状态 Sample status B1#~B4#，在第一个循环完全充电状态； B1#~B4#，at first cycle in fully charged states. B5#~B8#，在 25 个循环后完全充电状态 B5#~B8#，after 25cycles ending in fully charged states						
1.3	测试结果 Result						
样品编号 Sample No.	测试前/Before		测试后/After		质量损失 Mass Loss (%)	剩余电压 Residual OCV (%)	测试结果 Test Result
	质量/Mass (g)	电压/Voltage (V)	质量/Mass (g)	电压/Voltage (V)			
B1#	84.1668	4.50	84.1651	4.49	0.0020	99.778	O
B2#	83.7696	4.50	83.7680	4.49	0.0019	99.778	O
B3#	83.8661	4.50	83.8644	4.49	0.0020	99.778	O
B4#	83.9932	4.50	83.9920	4.49	0.0014	99.778	O
B5#	83.9510	4.49	83.9489	4.48	0.0025	99.777	O
B6#	83.7912	4.49	83.7884	4.48	0.0033	99.777	O
B7#	83.8939	4.49	83.8916	4.48	0.0027	99.777	O
B8#	84.0048	4.49	84.0018	4.48	0.0036	99.777	O

Note:
 L-Leakage, V-Venting, D -Disassembly, R -Rupture, F-Fire, O-No leakage, no venting, no disassembly, no rupture, no fire.
 注: L- 泄漏; V- 排气; D- 解体; R- 破裂; F - 起火; O- 无泄漏、无排气、无解体、无破裂、无起火。

附表 2

Appendix 2

测试项目 Test Items	温度试验 Thermal test
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1.1	测试步骤 Test procedure
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将测试电芯和电池在温度为 $72\pm 2^{\circ}\text{C}$ 的条件下贮存不少于 6 个小时，然后在温度 $-40\pm 2^{\circ}\text{C}$ 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 10 次，然后将测试电芯和电池在环境温度为 $20\pm 5^{\circ}\text{C}$ 的条件下放置 24 个小时。

Test cells and batteries are to be stored for at least six hours at a test temperature equal to $72\pm 2^{\circ}\text{C}$ followed by storage for at least six hours at a test temperature equal to $-40\pm 2^{\circ}\text{C}$. The maximum time interval between test temperature extremes in 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 ($20\pm 5^{\circ}\text{C}$).

1.2	样品状态 Sample status
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	B1#~B4#, 在第一个循环完全充电状态; B1#~B4#, at first cycle in fully charged states.
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B5#~B8#, after 25cycles ending in fully charged states

1.3	测试结果 Result
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样品编号 Sample No.	测试前/Before		测试后/After		质量损失	剩余电压	测试结果
	质量/Mass (g)	电压/Voltage (V)	质量/Mass (g)	电压/Voltage (V)	Mass Loss (%)	Residual OCV (%)	Test Result

B1#	84.1651	4.49	84.1602	4.39	0.0058	97.773	O
B2#	83.7680	4.49	83.7633	4.39	0.0056	97.773	O
B3#	83.8644	4.49	83.8593	4.39	0.0061	97.773	O
B4#	83.9920	4.49	83.9881	4.39	0.0046	97.773	O
B5#	83.9489	4.48	83.9429	4.40	0.0071	98.214	O
B6#	83.7884	4.48	83.7830	4.40	0.0064	98.214	O
B7#	83.8916	4.48	83.8867	4.39	0.0058	97.991	O
B8#	84.0018	4.48	83.9973	4.40	0.0054	98.214	O

Note:

L-Leakage, V-Venting, D -Disassembly, R -Rupture, F-Fire, O-No leakage, no venting, no disassembly, no rupture, no fire.

注: L- 泄漏; V- 排气; D- 解体; R- 破裂; F- 起火; O- 无泄漏、无排气、无解体、无破裂、无起火。

附表 3

[illegible]

附表 5
Appendix5

测试项目 Test Items	外部短路 External short circuit	
1.1	测试步骤 Test procedure	
	测试电芯和电池应加热一段必要的时间,使得电芯和电池外壳温度达到均匀稳定的$57\pm4^{\circ}\text{C}$。这段加热时间的长短取决于电芯和电池的设计尺寸大小,同时这段加热时间应加以评估和记录。若无法评估加热时间,则小型电芯和电池需暴露至少6小时。然后,测试电芯和电池应在$57\pm4^{\circ}\text{C}$条件下经受总外电阻小于0.1欧姆的外短路。当小型电芯和电池的外壳温度降到$57\pm4^{\circ}\text{C}$后应继续维持外短路状态至少1个小时。短路和降温阶段的温度应至少相当于环境温度。 The cell or battery to be tested shall be heated for a period of time necessary to reach a homogeneous stabilized temperature of $57\pm4^{\circ}\text{C}$, 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 $57\pm4^{\circ}\text{C}$ 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 $57\pm4^{\circ}\text{C}$, 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 phase shall be conducted at least at ambient temperature.	
1.2	样品状态 Sample status	
	B1#~B4#, 在第一个循环完全充电状态; B1#~B4#, at first cycle in fully charged states.	
	B5#~B8#, 在 25 个循环后完全充电状态 B5#~B8#, after 25 cycles ending in fully charged states	
1.3	测试结果 Result	
样品编号 Sample No.	样品表面最高温度 ($^{\circ}\text{C}$) Max. External Temperature	测试结果 Test Result
B1#	59.13	O
B2#	59.58	O
B3#	59.10	O
B4#	60.14	O
B5#	59.28	O
B6#	59.73	O
B7#	59.36	O
B8#	60.34	O
Note: D -Disassembly, R -Rupture, F-Fire, O-No leakage, no venting, no disassembly, no rupture, no fire. 注: D- 解体; R- 破裂; F- 起火; O- 无泄漏、无排气、无解体、无破裂、无起火。		

附表 6

Appendix6

测试项目 Test Items	挤压 Crush				
1.1	测试步骤 Test procedure				
	将一块电芯或组成电池的电芯放置在挤压设备的两个挤压平面之间进行挤压。挤压在第一个接触点以约 1.5cm/s 的速度逐步进行，直到出现以下三种情况之一为止： 1) 挤压力达到 13KN±0.78KN； 2) 电芯电压下降了至少 100mV；或 3) 电芯厚度和最初比较，变形至少 50%。 一旦达到了最大压力或电芯的电压下降超过 100mV 或电芯变形超过 50%，应解除压力。对棱柱或袋形电芯，应对最宽面进行挤压；对钮扣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。 每个电芯只接受一次挤压，并且用于测试的电芯应没有做过其它测试试验，试验结束后应继续观察 6h。 A cell or component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5 cm/s at the first point of contact. The crushing is to be continued until the first of the three options below is reached. (a) The applied force reaches 13 kN ± 0.78 kN; (b) The voltage of the cell drops by at least 100 mV; or (c) The cell is deformed by 50% or more of its original thickness. Once the maximum pressure has been obtained, the voltage drops by 100 mV or more, or the cell is deformed by at least 50% of its original thickness, the pressure shall be released. A prismatic or pouch cell shall be crushed by applying the force to the widest side. A button/coin cell shall be crushed by applying the force on its flat surfaces. For cylindrical cells, the crush force shall be applied perpendicular to the longitudinal axis. Each test cell or component cell is to be subjected to one crush only. The test sample shall be observed for a further 6h. The test shall be conducted using test cells or component cells that have not previously been subjected to other tests.				
1.2	样品状态 Sample status				
	C1#~C5#，在第一个循环后 50%的额定容量 C1#~C5#，at first cycle at 50% of the design rated capacity				
	C6#~C10#，在 25 个循环后 50%的额定容量 C6#~C10#，after 25 cycles ending at 50% of the design rated capacity.				
1.3	测试结果 Result				
样品编号 Sample No.	样品表面最高温度 (°C) Max. External Temperature	测试结果 Test result	样品编号 Sample No.	样品表面最高温度 (°C) Max. External Temperature	测试结果 Test result
C1#	23.6	O	C6#	24.1	O
C2#	24.0	O	C7#	25.1	O
C3#	24.2	O	C8#	24.2	O
C4#	23.9	O	C9#	24.1	O
C5#	24.4	O	C10#	24.4	O

Note:

D -Disassembly, F-Fire, O-No disassembly, no fire.

注： D- 解体； F - 起火； O-无解体、无起火。

附表 7
Appendix 7

测试项目 Test Items	过度充电 Overcharge	
1.1	测试步骤 Test procedure	
	充电电流为制造商推荐的最大连续充电电流的两倍。 The charge current shall be twice the manufacturer's recommended maximum continuous charge current.	
	制造商建议的充电电压不大于 18V 时, 试验的最小电压应是电池组最大充电电压的两倍或 22 伏特两者中的较小者。 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.	
	制造商建议的充电电压大于 18V 时, 测试的最小电压应该为 1.2 倍的制造商标定的最大充电电压。 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.	
	厂家推荐最大充电电压为 4.53 V, 厂家推荐最大充电电流为 8.566 A。测试电压为 9.06 V, 电流为 17.132 A。 The manufacturer's recommended maximum charge voltage is 4.53 V. The manufacturer's recommended maximum continuous charge current is 8.566 A. The voltage of the test is 9.06 V, and the current is 17.132 A.	
1.2	样品状态 Sample status	
	B9#~B12#, 在第一个循环完全充电状态; B9#~B12#, at first cycle in fully charged states.	
	B13#~B16#, 在 25 个循环后完全充电状态 B13#~B16#, after 25 cycles ending in fully charged states	
1.3	测试结果 Result	
样品编号 Sample No.	测试前开路电压 Voltage Before Test (V)	测试结果 Test Result
B9#	4.47	O
B10#	4.47	O
B11#	4.47	O
B12#	4.47	O
B13#	4.47	O
B14#	4.47	O
B15#	4.48	O
B16#	4.47	O
Note: D -Disassembly, F-Fire, O-No disassembly, no fire. 注: D- 解体; F - 起火; O-无解体、无起火。		

附表 8

Appendix8

测试项目 Test Items	强制放电 Forced discharge				
1.1	测试步骤 Test procedure				
	在 20±5℃的环境温度下，将单个电芯连接在 12V 的直流电源上进行强制放电，此直流电源提供每个电芯初始电流为制造厂指定的最大放电电流，放电时间为额定容量除以初始电流。 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 the manufacturer. The specified discharge current is to be obtained by connecting a resistive load of the appropriate size and rating in series with the test cell, Each cell shall be forced discharged for a time interval(in hours) equal to its rated capacity divided by the initial test current(in ampere).				
1.2	样品状态 Sample status				
	C11#~C20#,在第一个循环完全放电状态; C11#~C20#, at first cycle in fully discharged states;				
	C21#~C30#,在 25 个循环后完全放电状态; C21#~C30#, after 25cycles ending in fully discharged states;				
1.3	测试结果 Result				
样品编号 Sample No.	测试前开路电压 Voltage Before Test (V)	测试结果 Test Result	样品编号 Sample No.	测试前开路电压 Voltage Before Test (V)	测试结果 Test Result
C11#	3.676	O	C21#	3.662	O
C12#	3.674	O	C22#	3.664	O
C13#	3.670	O	C23#	3.666	O
C14#	3.671	O	C24#	3.661	O
C15#	3.674	O	C25#	3.668	O
C16#	3.670	O	C26#	3.675	O
C17#	3.666	O	C27#	3.669	O
C18#	3.668	O	C28#	3.665	O
C19#	3.673	O	C29#	3.666	O
C20#	3.675	O	C30#	3.678	O
Note: D -Disassembly, F-Fire, O-No disassembly, no fire. 注：D-解体；F -起火；O-无解体、无起火。					

——以下无内容——

