







Report No.:

报告编号: HLDY20190101U01

# 检测报告 **TEST REPORT**

NAME OF SAMPLE: Cylindrical Lithium-ion Rechargeable Cell

产品名称: 可充电圆柱形锂离子电芯

CLIENT: Xinxiang hongli supply source technology co.,ltd

委托单位:新乡市弘力电源科技有限公司

CLASSIFICATION OF TEST: Commission test

检测类别: 委托检测

广州邦禾检测技术有限公司

Guangzhou MCM Certification and Testing Co., Ltd



	General information 基本资料
Name of samples 样品名称	Cylindrical Lithium-ion Rechargeable Cell 可充电圆柱形锂离子电芯
Type/ Model 型号规格	18650 3.7V 1200mAh 4.44Wh
Trade mark 商标	
Commission by 委托单位	Xinxiang hongli supply source technology co.,ltd 新乡市弘力电源科技有限公司
Commissioner address 委托单位地址	Dayang Village South, zhaipo Town, Xinxiang, China 新乡县翟坡镇中大阳村南
Manufacturer 制造商	Xinxiang hongli supply source technology co.,ltd 新乡市弘力电源科技有限公司
Manufacturer address 制造商地址	Dayang Village South, zhaipo Town, Xinxiang, China 新乡县翟坡镇中大阳村南
Factory 生产厂	Xinxiang hongli supply source technology co.,ltd 新乡市弘力电源科技有限公司
Factory address 生产厂地址	Dayang Village South, zhaipo Town, Xinxiang, China 新乡县翟坡镇中大阳村南
Appearance 样品外观颜色	Purple 紫色
Sample status 样品状态	Good 完好
Quantity of sample 样品数量	35pcs
Sample identification 样品标识序号	c1#~c35#
Reference standard 参考标准	UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6 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 section 38.3.
Receiving date 接样日期	2019.01.01
Completing date 完成日期	2019.01.15

	Test Conclusion 测试结论							
No. 序号	Name of test 测试项目名称	Testing standard 测试标准	Test result 测试结果	Conclusion 本项结论	Remarks 备注			
1	Altitude simulation 高度模拟		See Appendix 1 见附表 1	Passed 合格	/			
2	Thermal test 温度试验		See Appendix 2 见附表 2	Passed 合格	/			
3	Vibration 振动		See Appendix 3 见附表 3	Passed 合格	/			
4	Shock 冲击	UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6	See Appendix 4 见附表 4	Passed 合格	/			
5	External Short-circuit 外部短路	section 38.3. 联合国《关于危险货物运输的建议书试验和标准	See Appendix 5 见附表 5	Passed 合格	/			
6	Impact 撞击	手册》 ST/SG/AC.10/11/ Rev.6 section 38.3.	See Appendix 6 见附表 6	Passed 合格	/			
	Crush 挤压		/	/	N/A 不适用			
7	Overcharge 过度充电		/	/	N/A 不适用			
8	Forced discharge 强制放电		See Appendix 7 见附表 7	Passed 合格	/			

#### Conclusion/结论:

The Cylindrical Lithium-ion Rechargeable Cells submitted by Xinxiang hongli supply source technology co.,ltd had 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 section 38.3.

由新乡市弘力电源科技有限公司送检的可充电圆柱形锂离子电芯符合联合国《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 section 38.3.的要求。

Seal/检测专用章:

Date of issue/日期: Jan. 15, 2019

Tested by Ye Runlong

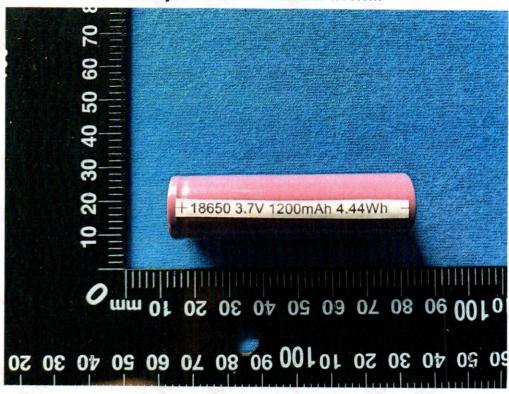
Reviewed by Huang Yining

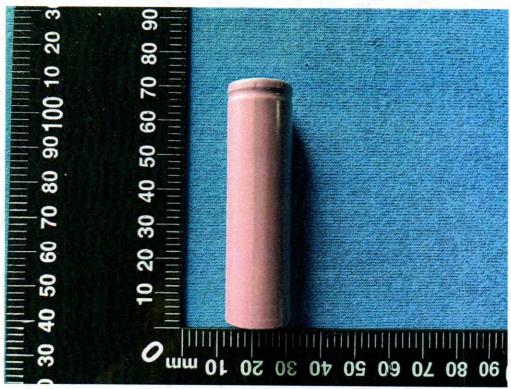
Approved by Xu Hongbin

测试: Ye Runlong

## Photos of samples and markings 样品及标识照片

Battery (18650 3.7V 1200mAh 4.44Wh)





			Apper 附表				
Test Items 测试项目	Altitude sim 高度模拟	ulation					
1.1	Test procedure 测试步骤						
	at ambient t	emperature (2	20±5℃).		ure of 11.6kPa :小于等于 11. 6		
1.2	Sample sta 样品状态	tus					
		at first cycle i E第一个循环完				18	
1.3	Result 测试结果					. 2	2.
Sample No.	Before	Before 测试前 After 测试后		Mass loss	Residual		
样品编号	Mass 样品质量 (g)	Voltage 开路电压 (V)	Mass 样品质量 (g)	Voltage 开路电压 (V)	质量损失 (%)	OCV 剩余电压 (%)	Test result 测试结果
C1#	36.477	4.18	36.475	4.18	0.005	100.00	0
C2#	36.518	4.17	36.515	4.17	0.008	100.00	0
C3#	36.478	4.18	36.477	4.17	0.003	99.76	0
C4#	36.165	4.18	36.162	4.17	0.008	99.76	0
C5#	36.533	4.17	36.531	4.17	0.005	100.00	0
C6#	36.429	4.18	36.427	4.18	0.005	100.00	0
C7#	36.617	4.18	36.615	4.18	0.005	100.00	0
C8#	36.591	4.18	36.589	4.18	0.005	100.00	0
C9#	36.382	4.18	36.380	4.17	0.005	99.76	0
C10#	36.810	4.17	36.807	4.17	0.008	100.00	0

				endix 2 表 2					
Test Items 测试项目	Thermal test 温度试验								
1.1	Test procedure 测试步骤								
	72±2℃, fo The maxir procedure batteries a 将电芯和电 贮存不少于	llowed by st mum time i is to be repore to be store 池在温度为 6个小时,	torage for at interval betweeted until 1 ed for 24 hours 72±2℃的条两个温度间的	least six hoween test te 0 total cycles urs at ambien 件下贮存不少	east six hours a urs at a test ter imperature extres are complete, at temperature (次于6个小时,约30min,重复操作时。	mperature equemes is 30 after which all 20±5℃). 然后,在温度-4	al to -40±2℃ minutes, This test cells and $0\pm2$ ℃条件下		
1.2	Sample st 样品状态 C1#~C10#		e in fully cha	rged states;					
1.3	C1#~C10#, ? Result 测试结果	在第一个循环	不完全充电状	态;					
Sample No. 样品编号	Before Mass 样品质量 (g)	测试前 Voltage 开路电压 (V)	After Amass 样品质量 (g)	Voltage 开路电压 (V)	Mass loss 质量损失 (%)	Residual OCV 剩余电压 (%)	Test result 测试结果		
C1#	36.475	4.18	36.458	4.10	0.047	98.09	0		
C2#	36.515	4.17	36.499	4.10	0.044	98.32	0		
C3#	36.477	4.17	36.462	4.11	0.041	98.56	0		
C4#	36.162	4.17	36.146	4.10	0.044	98.32	0		
C5#	36.531	4.17	36.514	4.10	0.047	98.32	0		
C6#	36.427	4.18	36.409	4.10	0.049	98.09	0		
C7#	36.615	4.18	36.599	4.11	0.044	98.33	0		
C8#	36.589	4.18	36.572	4.10	0.046	98.09	0		
C9#	36.380	4.17	36.364	4.11	0.044	98.56	0		
C10#	36.807	4.17	36.789	4.09	0.049	98.08	0		

				endix 3 表 3					
Test Items	Vibration								
测试项目	振动								
1.1	Test proce 测试步骤	edure							
	distorting the be a sinusord Hz traverse each of three 将电芯和电加至 200Hz	ne cells in su bidal wave fo ed in 15 minu ee mutually 地牢固地安 ,然后再减少	ich a manne orm with a lo utes, This cy perpendicula 装在振动台的	r as to faithfugarithmic swocle shall be ar mounting ph台面上,然	ully transmit the eep between 7 repeated 12 tir position of the 后开始振动。 一个循环持续1	pration machine is vibration, The Prize and 200Hz mes for a total or cell. 振动以正弦波形	vibration shall and back to 7 f 3 hours for 式,以 7Hz 增		
1.2	Sample st 样品状态								
		The second secon	e in fully cha 下完全充电状						
1.3	Result 测试结果								
Sample No. 样品编号	Before Mass 样品质量 (g)	测试前 Voltage 开路电压 (V)	After A Mass 样品质量 (g)	则试后 Voltage 开路电压 (V)	Mass loss 质量损失 (%)	Residual OCV 剩余电压 (%)	Test result 测试结果		
C1#	36.458	4.10	36.457	4.10	0.003	100.00	0		
C2#	36.499	4.10	36.497	4.09	0.005	99.76	0		
C3#	36.462	4.11	36.460	4.10	0.005	99.76	0		
C4#	36.146	4.10	36.143	4.10	0.008	100.00	0		
C5#	36.514	4.10	36.512	4.09	0.005	99.76	0		
C6#	36.409	4.10	36.407	4.09	0.005	99.76	0		
C7#	36.599	4.11	36.598	4.10	0.003	99.76	0		
C8#	36.572	4.10	36.570	4.09	0.005	99.76	0		
C9#	36.364	4.11	36.363	4.10	0.003	99.76	0		
C10#	36.789	4.09	36.786	4.09	0.008	100.00	0		

			Apper 附表					
Test Items 测试项目	Shock 冲击		PIJA	<b>C</b> 4				
1.1	Test procedure 测试步骤							
	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 battery, 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. 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. 被测电芯和电池用坚硬的支架紧固在试验装置上,支架支撑着每个试验电池的所有安装面。每个电芯须经受 150gn 的最大加速度和脉冲持续时间为 6 毫秒的半正弦波冲击。另外,大电芯可能经受 50gn 的加速度和脉冲持续时间 11 毫秒的半正弦冲击。每个电池芯或电池应在三个							
1.2	Sample sta 样品状态		开山, 贝内丹	<b>台承文 3 </b>	击,共18次。	7		
			in fully charge 完全充电状态;					
1.3	Result 测试结果	2014	all the total of			100		
Sample No.	Before 测试前		After	After 测试后		Residual	Tool	
样品编号	Mass 样品质量 (g)	Voltage 开路电压 (V)	Mass 样品质量 (g)	Voltage 开路电压 (V)	质量损失	OCV 剩余电压 (%)	Test result 测试结界	
C1#	36.457	4.10	36.454	4.09	0.008	99.76	0	
C2#	36.497	4.09	36.495	4.09	0.005	100.00	0	
C3#	36.460	4.10	36.458	4.10	0.005	100.00	0	
C4#	36.143	4.10	36.141	4.00	0.006	00.76		
				4.09	0.000	99.76	0	
C5#	36.512	4.09	36.510	4.09	0.005	100.00	0	
	36.512 36.407	4.09		2	A Same			
C5#			36.510	4.09	0.005	100.00	0	
C5# C6#	36.407	4.09	36.510 36.406	4.09	0.005 0.003	100.00 99.76	0	
C5# C6# C7#	36.407 36.598	4.09	36.510 36.406 36.597	4.09 4.08 4.09	0.005 0.003 0.003	100.00 99.76 99.76	0 0	

	Appendix 5 附表 5					
Test Items 测试项目	External short circuit 外部短路					
1.1	Test procedure 测试步骤					
	The cell or battery to be tested shall be heated f homogeneous stabilized temperature of 57±4°C period of time depends on the size and design of t and documented. If this assessment is not feasible hours for small cells and small batteries, and 12. Then the cell or battery at 57± 4°C shall be subjeted total external resistance of less than 0.1 ohm. This short circuit condition is continued for at least case temperature has returned to 57±4°C, or decreased by half of the maximum temperature remains below that value. 待试验电芯或电池的温度须处于稳定状态,使其外时间取决于电芯或电池的温度须处于稳定状态,使其外时间取决于电芯或电池的尺寸和设计,应该评估和记小电芯和小电池至少6小时、大电芯和大型电池至少下经受总外阻小于0.1 欧姆的短路状况。这一短路状况应在电芯或电池外壳温度恢复至57世中地外壳温度恢复至57世中的120世中的1	measured on the exhe cell or battery and shole, the exposure time shours for large cells are ected to one short circulate one hour after the cell or in the case of the large increase observed dustallow by 12 个小时。接着使电芯上4℃后至少持续 1 小时。	ternal case. The sould be assessed that the at least and large batteries it condition with the state of the			
1.2	电池外壳温度下降至测试观察期间最高温升的一半 Sample status 样品状态	,开保持怟丁侈值。				
1.3	C1#~C10#, at first cycle in fully charged states; C1#~C10#, 在第一个循环完全充电状态; Result 测试结果		(2)			
Sample No. 样品编号	Max. External Temperature 样品表面最高温度 (℃)	Test result 测试结果	Remark 备注			
C1#	135.8	0	1			
C2#	137.9	0	1			
C3#	141.2	0	1			
C4#	137.4	0	1			
C5#	136.8	0	I			
C6#	139.5	0	I			
C7#	133.6	0	1			
C8#	140.8	0	1			
C9#	138.6	0	1			
C10#	135.7	0	1			

Note:  ${\bf D}$  -Disassembly,  ${\bf R}$  -Rupture,  ${\bf F}$ -Fire,  ${\bf O}$ - no disassembly, no rupture, no fire.

注: D- 解体; R- 破裂; F- 起火; O-无解体、无破裂、无起火。

	Apper 附表		
Test Items 测试项目	Impact 撞击		
1.1	Test procedure 测试步骤		A 141 5
	The sample cell or component cell is to 0.1mm diameter, at least 6 cm long, or greater, Type 316 stainless steel bar is kg ± 0.1 kg mass is to be dropped from and sample in a controlled manner usin with minimal drag on the falling mass. mass shall be oriented 90 degrees from is to be impacted with its longitudinal axilongitudinal axis of the 15.8mm ± 0.1m the test sample. Each sample is to be simple that the test sample is to be simple to be simple. Each sample is to be simple to be simple to be simple. The test sample is to be simple to be simple to be simple to be simple to be simple. The test sample is to be simple to be simple. The test sample is to be simple to be si	the longest dimension of the to be placed across the central and a height of 61 ± 2.5 cm at any a near rictionless, vertical track or channer of the vertical track or channer of the horizontal supporting a parallel to the flat surface of m diameter curved surface of subjected to only a single in a line of the management of the longest of the longes	ne cell, whichever is entre of the sample. A 9. the intersection of the bal sliding track or channed used to guide the falling surface. The test sample and perpendicular to the lying across the centre of the pact.  [图案 大度至少 6 厘米 (图象) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	撞击的圆柱形电池的纵轴应与不锈钢棒 米弯曲表面的纵轴垂直。每只样品只经	平面表面平行,并与横放在	77
1.2	撞击的圆柱形电池的纵轴应与不锈钢棒 米弯曲表面的纵轴垂直。每只样品只经 Sample status 样品状态	平面表面平行,并与横放在	77
1.2	米弯曲表面的纵轴垂直。每只样品只经 Sample status	平面表面平行,并与横放在 受一次撞击。 e design rated capacity;	77
1.2	米弯曲表面的纵轴垂直。每只样品只经 Sample status 样品状态 C11#~C15#, at first cycle at 50% of the	平面表面平行,并与横放在 受一次撞击。 e design rated capacity;	77
1.3	米弯曲表面的纵轴垂直。每只样品只经 Sample status 样品状态 C11#~C15#, at first cycle at 50% of the C11#~C15#, 在第一个循环 50%的额定程 Result	平面表面平行,并与横放在 受一次撞击。 e design rated capacity;	77
1.3 Sample No.	米弯曲表面的纵轴垂直。每只样品只经 Sample status 样品状态 C11#~C15#, at first cycle at 50% of the C11#~C15#, 在第一个循环 50%的额定名 Result 测试结果 Max. External Temperature 样品表面最高温度	平面表面平行,并与横放在 受一次撞击。 e design rated capacity; 容量;	样品中心直径为 15.8 毫 Remark
<b>1.3</b> Sample No. 样品编号	米弯曲表面的纵轴垂直。每只样品只经 Sample status 样品状态 C11#~C15#, at first cycle at 50% of the C11#~C15#, 在第一个循环 50%的额定名 Result 测试结果 Max. External Temperature 样品表面最高温度 (℃)	平面表面平行,并与横放在 受一次撞击。 e design rated capacity; 容量; Test result 测试结果	样品中心直径为 15.8 毫 Remark 备注
1.3 Sample No. 样品编号 C11#	米弯曲表面的纵轴垂直。每只样品只经验 Sample status 样品状态 C11#~C15#, at first cycle at 50% of the C11#~C15#, 在第一个循环 50%的额定程 Result 测试结果 Max. External Temperature 样品表面最高温度 (℃)	平面表面平行,并与横放在是一次撞击。  e design rated capacity;  字量;  Test result 测试结果  O	样品中心直径为 15.8 毫 Remark 备注
1.3 Sample No. 样品编号 C11# C12#	米弯曲表面的纵轴垂直。每只样品只经验 Sample status 样品状态 C11#~C15#, at first cycle at 50% of the C11#~C15#, 在第一个循环 50%的额定程 Result 测试结果 Max. External Temperature 样品表面最高温度 (℃)  141.5	平面表面平行,并与横放在是一次撞击。  e design rated capacity;  字量;  Test result 测试结果  O O	样品中心直径为 15.8 毫 Remark 备注 /

注: D- 解体; F- 起火; O-无解体、无起火。

Report No.: HLDY20190101U01

		Apper 附表						
Test Items	Forced discharge	111.0						
测试项目	强制放电							
1.1	Test procedure 测试步骤							
	12V D. C, power suppression specified by the man connecting a resistive Each cell shall be fore divided by the initial te 在 20±5℃的环境温度供每个电芯初始电流为	pply at an initionufacturer The load of the appeted discharged at current(in am下,将单个电芯	al current equal specified discoppropriate size for a time intervipere). 连接在 12V 的直	erature by connecting it all to the maximum discontraction of the series with	charge currer e obtained b h the test cel rated capacit 此直流电源提			
1.2	Sample status 样品状态							
	C16#~C25#, at first cy C16#~C25#, 在第一个循 C26#~C35#, after 50 c C26#~C35#, 在第五十个	f环完全放电状态 cycles ending in	fully discharge	d states;				
1.3	测试结果							
Sample No. 样品编号	Voltage Before test 测试前开路电压 (V)	Test result 测试结果	Sample No. 样品编号	Voltage Before test 测试前开路电压 (V)	Test result 测试结果			
C16#	3.223	0	C26#	3.189	0			
C17#	3.175	0	C27#	3.212	0			
C18#	3.201	0	C28#	3.212	0			
C19#	3.234	0	C29#	3.201	0			
C20#	3.196	0	C30#	3.189	0			
C21#	3.211	0	C31#	3.196	0			
C22#	3.205	0	C32#	3.196	0			
Secretary and the	3.201	0	C33#	3.201	0			
C23#	0.201							
C23#	3.201	0	C34#	3.213	0			

Note:  ${\bf D}$  -Disassembly,  ${\bf F}\text{-}{\bf Fire},\,{\bf O}\text{-}$  no disassembly, no fire.

注: D- 解体; F- 起火; O-无解体、无起火。

## 注意事项

### Important

1. 本报告无检测单位检测专用章、骑缝章无效。

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  The test report is valid for the tested samples only.

检测单位:广州邦禾检测技术有限公司

Laboratory: Guangzhou MCM Certification and Testing Co., Ltd

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