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No: 01052000000985-1(E)

Date: 2020-04-08

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UN38.3 报告 UN38.3 Test Report

样品名称: 锂离子电池

Sample Name: Rechargeable Lithium-ion Battery Pack

委托单位: 深圳市比亚迪锂电池有限公司

Applicant: Shenzhen BYD Lithium Battery Company Limited



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检测证书 TEST REPORT

样品名称 Sample Name	锂离子电池 Rechargeable Lithium-ion Battery Pack		
型号 Model	TLp048A1		
委托单位 Applicant	深圳市比亚迪锂电池有限公司 Shenzhen BYD Lithium Battery Company Limited		
委托单位地址 Applicant Address	中国广东省深圳市龙岗区龙岗街道宝龙工业城宝荷路 3001 号 No.3001,Baohe Road, Baolong Industry Zone, Longgang Street, Longgang, Shenzhen, Guangdong Province, P.R. China		
生产单位 Manufacture	深圳市比亚迪锂电池有限公司 Shenzhen BYD Lithium Battery Company Limited		
生产单位地址 Manufacture Address	中国广东省深圳市龙岗区龙岗街道宝龙工业城宝荷路 3001 号 No.3001,Baohe Road, Baolong Industry Zone, Longgang Street, Longgang, Shenzhen, Guangdong Province, P.R. China		
样品外观与性状 Appearance & Odor	银色铝塑膜外壳 Sliver Al-plastic film shell		
测试方法和判定标准 Test method and criterion	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/Amend.1, 38.3 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS", Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3		
接样时间 Accepted date	2020-03-13	测试日期 Test date	2020-03-13~2020-04-08
测试项目 Test items	高度模拟、温度试验、振动、冲击、外部短路、挤压、过度充电、强制放电。 Altitude simulation, Thermal test, Vibration, Shock, External short circuit, Crush, Overcharge, Forced discharge.		
结论 Conclusion	经测试, 该样品符合联合国《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/Amend.1, 38.3 标准要求。 The sample has 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/Amend.1, 38.3.		
备注 Remark	1.检测结果仅对样品有效; The test results are only valid for the test samples submitted the applicant. 2.随附 UN38.3 试验概要(编号: 01052000000985-2(E))。 Attached with UN38.3 test summary (No.: 01052000000985-2(E)).		



批准

Approver:

李心怡

审核

Checker:

莫子君

主检

Appraiser:

周伟光

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电池信息:

The Cell information:

电池类型 Battery type	锂离子电池 Lithium ion batteries	标称电压 Nominal Voltage	3.85V
额定容量 Rated Capacity	4850mAh	总能量 Total Energy	18.67Wh
充电限制电压 Limited Charge Voltage	4.40V	标准充电电流 Standard Charge Current	970mA
最大充电电流 Maximum Charge Current	4850mA	充电截止电流 Charge Cut-off Current	97mA
标准放电电流 Standard discharge Current	970mA	最大放电电流 Maximum Discharge Current	4850mA
放电截止电压 Discharge Cut-off Voltage	3.0V	物理形状说明 Physical description	88.0mm(L) × 65.7mm(W) × 5.0mm(H)
重量 Mass	65.1g		

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序号 No.	测试项目名称 Name of test	标准要求或标准条款号 Stand requirement or the clause number of standard	测试结果 Test result	本项结论 Test conclusion	备注 Remark	
1	高空模拟 Altitude simulation	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.1 Test T.1	见附表 1 See Appendix 1	合格 Passed	/	
2	温度循环 Thermal test	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.2 Test T.2	见附表 2 See Appendix 2	合格 Passed	/	
3	振动 Vibration	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.3 Test T.3	见附表 3 See Appendix 3	合格 Passed	/	
4	冲击 Shock	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.4 Test T.4	见附表 4 See Appendix 4	合格 Passed	/	
5	外部短路 External short circuit	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.5 Test T.5	见附表 5 See Appendix 5	合格 Passed	/	
6	挤压 Crush	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.6 Test T.6	见附表 6 See Appendix 6	合格 Passed	/	
7	过度充电 Overcharge	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.7 Test T.7	见附表 7 See Appendix 7	合格 Passed	/	
8	强制放电 Forced discharge	联合国《关于危险货物运输的建议书 试验和标准手册》UN Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1, 38.3 试验 T.8 Test T.8	见附表 8 See Appendix 8	合格 Passed	/	
测试环境 Test environment condition		环境温度: 20°C-25°C; 环境湿度: 45%-75% Ambient temperature: 20°C-25°C, Ambient humidity: 45%-75%				
分包测试情况 Subcontracted test condition		测试项目 Test items	/			
		分包实验室 Subcontracted Laboratory	名称 Name	/	邮编 Post code	/
			地址 Address	/	电话 Tel	/

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序号 No.	附表 1 Appendix 1	测试项目名称 Name of test		高空模拟 Altitude simulation			
标准要求 Requirement of Standard	试验电池在压力等于或低于 11.6kPa 和环境温度 20±5℃ 下存放至少 6h。试验电池应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧, 并且每个试验电池在试验后的开路电压不少于其在进行这一试验前电压的 90% (完全放电状态的试验电池除外)。 Test cells shall be stored at a pressure of 11.6kPa or less for at least six hours at ambient temperature 20±5℃. Cells 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 at fully discharged states.						
样品状态 Sample status	C1#~C5#: 第一个循环完全充电的电池; C1#~C5#: first cycle in fully charged states. C6#~C10#: 第二十五个循环完全充电的电池。 C6#~C10#: after 25 cycles ending in fully charged states.						
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
	电池质量 m ₁ (g)	开路电压 v ₁ (v)	电池质量 m ₂ (g)	开路电压 v ₂ (v)			
C1#	65.494	4.33	65.494	4.33	0.00	100.00	O
C2#	65.486	4.33	65.486	4.33	0.00	100.00	O
C3#	65.697	4.34	65.696	4.34	0.00	100.00	O
C4#	65.681	4.33	65.681	4.33	0.00	100.00	O
C5#	65.619	4.33	65.618	4.33	0.00	100.00	O
C6#	65.692	4.34	65.692	4.34	0.00	100.00	O
C7#	65.372	4.33	65.372	4.33	0.00	100.00	O
C8#	65.792	4.33	65.792	4.33	0.00	100.00	O
C9#	65.582	4.33	65.582	4.33	0.00	100.00	O
C10#	65.550	4.34	65.550	4.34	0.00	100.00	O
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。 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O- No Leakage, No Venting, No Disassembly, No Rupture & No Fire.							

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序号 No.	附表 2 Appendix 2	测试项目名称 Name of test		温度循环 Thermal test			
标准要求 Requirement of Standard	<p>试验电池或电池组在试验温度等于 $72^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 下存放至少 6h, 接着在试验温度等于 $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 下存放至少 6h (大型电池或电池组暴露于极端试验温度的时间至少为 12h)。两个极端试验温度之间的最大时间间隔为 30min。重复 10 次, 再将所有试验电池或电池组在环境温度 $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 下存放 24h。试验电池或电池组应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧, 并且每个试验电池或电池组在试验后的开路电压不少于其在进行这一试验前电压的 90% (完全放电状态的试验电池或电池组除外)。</p> <p>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 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 ($20 \pm 5^{\circ}\text{C}$). For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12 hours. 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.</p>						
样品状态 Sample status	<p>C1#~C5#: 第一个循环完全充电的电池; C1#~C5#: first cycle in fully charged states. C6#~C10#: 第二十五个循环完全充电的电池。 C6#~C10#: after 25 cycles ending in fully charged states.</p>						
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
	电池质量 $m_1(\text{g})$	开路电压 $v_1(\text{V})$	电池质量 $m_2(\text{g})$	开路电压 $v_2(\text{V})$			
C1#	65.494	4.33	65.490	4.27	0.01	98.61	O
C2#	65.486	4.33	65.484	4.27	0.00	98.61	O
C3#	65.696	4.34	65.694	4.28	0.00	98.62	O
C4#	65.681	4.33	65.677	4.27	0.01	98.61	O
C5#	65.618	4.33	65.614	4.27	0.01	98.61	O
C6#	65.692	4.34	65.688	4.28	0.01	98.62	O
C7#	65.372	4.33	65.368	4.27	0.01	98.61	O
C8#	65.792	4.33	65.788	4.27	0.01	98.61	O
C9#	65.582	4.33	65.578	4.27	0.01	98.61	O
C10#	65.550	4.34	65.546	4.28	0.01	98.62	O
<p>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。 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O- No Leakage, No Venting, No Disassembly, No Rupture & No Fire.</p>							

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序号 No.	附表 3 Appendix 3	测试项目名称 Name of test		振动 Vibration			
标准要求 Requirement of Standard	将电池或电池组直接安装或通过夹具安装在振动台的台面上, 用正弦波, 频率在 7Hz 和 200Hz 之间摆动再回到 7Hz 的对数扫频 15min, 对三个互相垂直的电池或电池组安装方向的每个方向重复进行 12 次, 一共振动 3h。试验电池或电池组应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧, 并且每个试验电池或电池组在试验后的开路电压不少于其在进行这一试验前电压的 90% (完全放电状态的试验电池或电池组除外)。 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. 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.						
样品状态 Sample status	C1#~C5#: 第一个循环完全充电的电池; C1#~C5#: first cycle in fully charged states. C6#~C10#: 第二十五个循环完全充电的电池。 C6#~C10#: after 25 cycles ending in fully charged states.						
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
	电池质量 m ₁ (g)	开路电压 v ₁ (v)	电池质量 m ₂ (g)	开路电压 v ₂ (v)			
C1#	65.490	4.27	65.490	4.27	0.00	100.00	O
C2#	65.484	4.27	65.484	4.27	0.00	100.00	O
C3#	65.694	4.28	65.694	4.27	0.00	99.77	O
C4#	65.677	4.27	65.677	4.27	0.00	100.00	O
C5#	65.614	4.27	65.614	4.27	0.00	100.00	O
C6#	65.688	4.28	65.688	4.28	0.00	100.00	O
C7#	65.368	4.27	65.368	4.27	0.00	100.00	O
C8#	65.788	4.27	65.788	4.27	0.00	100.00	O
C9#	65.578	4.27	65.578	4.27	0.00	100.00	O
C10#	65.546	4.28	65.546	4.28	0.00	100.00	O
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。 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O- No Leakage, No Venting, No Disassembly, No Rupture & No Fire.							

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序号 No.	附表 4 Appendix 4	测试项目名称 Name of test	冲击 Shock				
标准要求 Requirement of Standard	<p>将电池或电池组用坚硬支架紧固在试验装置上, 对于小型电池组, 应以加速度为 150gn 或 $gn = \sqrt{(100850 / mass)}$ 中较小者的正弦波冲击, 脉冲持续时间 6ms, 按三个相互垂直的轴向分别对其正负极各冲击 3 次, 共冲击 18 次。各试验电池或电池组应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧, 并且每个试验电池或电池组在试验后的开路电压不少于其在进行这一试验前电压的 90% (完全放电状态的试验电池或电池组除外)。</p> <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. Each small batteries shall be subjected to a half-sine shock of peak acceleration of 150gn or acceleration (gn) = $\sqrt{(100850 / mass)}$ and pulse duration of 6 milliseconds. Each cell or battery 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. 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.(NOTE: Mass is expressed in kilograms)</p>						
样品状态 Sample status	<p>C1#~C5#: 第一个循环完全充电的电池; C1#~C5#: first cycle in fully charged states. C6#~C10#: 第二十五个循环完全充电的电池。 C6#~C10#: after 25 cycles ending in fully charged states.</p>						
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
	电池质量 $m_1(g)$	开路电压 $v_1(v)$	电池质量 $m_2(g)$	开路电压 $v_2(v)$			
C1#	65.490	4.27	65.490	4.27	0.00	100.00	O
C2#	65.484	4.27	65.484	4.27	0.00	100.00	O
C3#	65.694	4.27	65.694	4.27	0.00	100.00	O
C4#	65.677	4.27	65.677	4.27	0.00	100.00	O
C5#	65.614	4.27	65.614	4.27	0.00	100.00	O
C6#	65.688	4.28	65.688	4.28	0.00	100.00	O
C7#	65.368	4.27	65.368	4.27	0.00	100.00	O
C8#	65.788	4.27	65.788	4.27	0.00	100.00	O
C9#	65.578	4.27	65.578	4.27	0.00	100.00	O
C10#	65.546	4.28	65.546	4.28	0.00	100.00	O
<p>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。 Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O- No Leakage, No Venting, No Disassembly, No Rupture & No Fire.</p>							

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序号 No.	附表 5 Appendix 5	测试项目名称 Name of test	外部短路 External short circuit
标准要求 Requirement of Standard	待试验电池或电池组的外壳温度稳定在 57±4℃后, 在 57±4℃下使电池或电池组经受总外电阻小于 0.1Ω 的短路条件, 当电池或电池组外壳温度回到 57±4℃后继续至少 1h, 然后短路断开, 再观察电池或电池组 6h 才结束试验。电池或电池组的外壳温度应不超过 170℃, 并且试验后 6h 内应无解体、无破裂和无燃烧。 The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches 57±4℃ 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℃. This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to 57±4℃. The cell or battery must be observed for a further six hours for the test to be concluded. Cells and batteries meet this requirement if their external temperature does not exceed 170℃ and there is no disassembly, no rupture and no fire within six hours of this test.		
样品状态 Sample status	C1#~C5#: 第一个循环完全充电的电池; C1#~C5#: first cycle in fully charged states. C6#~C10#: 第二十五个循环完全充电的电池。 C6#~C10#: after 25 cycles ending in fully charged states.		
样品编号 Sample No.	样品表面最高温度 Max External Temperature(℃)	测试结果 Test result	备注 Remark
C1#	57.1	O	/
C2#	56.8	O	/
C3#	58.2	O	/
C4#	58.3	O	/
C5#	56.9	O	/
C6#	59.6	O	/
C7#	58.4	O	/
C8#	57.9	O	/
C9#	55.3	O	/
C10#	58.8	O	/
注: D-解体; R-破裂; F-起火; O-无解体、无破裂、无起火。 Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture & No Fire.			

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序号 No.	附表 6 Appendix 6	测试项目名称 Name of test	挤压 Crush				
标准要求 Requirement of Standard	<p>(适用于棱柱形、袋装、硬币/纽扣电池和直径小于 18mm 的圆柱形电池): 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为 1.5cm/s。挤压持续进行, 直到出现以下三种情况之一即解除压力: (a)施加的力量达到 13±0.78kN; (b)电池的电压下降至少 100 毫伏; 或 (c)电池变形量达原始厚度的 50% 或以上。 棱柱形或袋装电池应从最宽的一面施压。纽扣/硬币电池应从其平坦表面施压。圆柱形电池应与纵轴垂直的方向施压。每个电池只做一次挤压试验。 试验电池或电池组的组成电芯外部温度不超过 170℃, 并且在试验过程中和试验后 6 小时内应无解体、无破裂、无起火。 Crush (applicable to prismatic, pouch, coin/button cells and cylindrical cells not more than 18 in diameter): 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. The crushing is to be continued until the first of the three options below is reached. (a)The applied force reaches 13±0.78kN; (b)The voltage of the cell drops by at least 100mV;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 at least 100mV or more, or the cell is deformed by at least 50% of its original thickness, the pressure shall be released. Each test cell or component cell is to be subjected to one crush only. Cells and component cells meet this requirement if their external temperature does not exceed 170℃ and there is no disassembly and no fire during the test and within six hours after this test.</p>						
样品状态 Sample status	<p>C11#~C15#: 第一个循环 50% 的额定容量的电芯。 C11#~C15#: first cycle at 50% of the design rated capacity of cell. C16#~C20#: 第二十五个循环 50% 的额定容量的电芯。 C16#~C20#: after 25 cycles at 50% of the design rated capacity of cell.</p>						
样品编号 Sample No.	样品表面最高温度 Max External Temperature(°C)	测试结果 Test result	备注 Remark	样品编号 Sample No.	样品表面最高温度 Max External Temperature(°C)	测试结果 Test result	备注 Remark
C11#	18.2	O	/	C16#	17.0	O	/
C12#	17.3	O	/	C17#	18.2	O	/
C13#	19.6	O	/	C18#	17.6	O	/
C14#	17.4	O	/	C19#	17.2	O	/
C15#	16.3	O	/	C20#	16.9	O	/
<p>注: D-解体; R-破裂; F-起火; O-无解体、无破裂、无起火。 Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture & No Fire.</p>							

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序号 No.	附表 7 Appendix 7	测试项目名称 Name of test	过度充电 Overcharge
标准要求 Requirement of Standard	充电电流必须是制造商建议的最大连续充电电流的两倍, 试验的最小电压应为如下: (a) 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 22V 两者中的较少者。 (b) 制造商建议的充电电压大于 18V 时, 试验的最小电压应是最大充电电压的 1.2 倍。 可再充电电池组在环境温度下试验 24h。试样在试验后 7 天内应无解体和无燃烧。 The charge current shall be twice the manufacturer's recommended maximum continuous charge current. The minimum voltage of the test shall be as follows: (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. (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. Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours. Rechargeable batteries meet this requirement if there is no disassembly and no fire within seven days of the test.		
样品状态 Sample status	C1#~C4#: 第一个循环完全充电的电池; C1#~C4#: first cycle in fully charged states. C5#~C8#: 第二十五个循环完全充电的电池。 C5#~C8#: after 25 cycles ending in fully charged states.		
样品编号 Sample No.	测试结果 Test result	备注 Remark	
C1#	O	/	
C2#	O	/	
C3#	O	/	
C4#	O	/	
C5#	O	/	
C6#	O	/	
C7#	O	/	
C8#	O	/	
注: D-解体; R-破裂; F-起火; O-无解体、无破裂、无起火。 Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture & No Fire.			

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序号 No.	附表 8 Appendix 8	测试项目名称 Name of test		强制放电 Forced discharge	
标准要求 Requirement of Standard	试验原电池或可再充电电池在环境温度下与 12V 的直流电源串联, 在起始电流等于制造商给定的最大放电电流的条件下强制放电。原电池或可再充电电池在试验后 7 天内应无解体和无燃烧。 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. 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). Primary or rechargeable cells meet this requirement if there is no disassembly and no fire within seven days of the test.				
样品状态 Sample status	C21#~C30#: 第一个循环完全放电的电芯; C21#~C30#: first cycle in fully discharged states; C31#~C40#: 第二十五个循环完全放电的电芯。 C31#~C40#: after 25 cycles in fully discharged states.				
样品编号 Sample No.	测试结果 Test result	备注 Remark	样品编号 Sample No.	测试结果 Test result	备注 Remark
C21#	O	/	C31#	O	/
C22#	O	/	C32#	O	/
C23#	O	/	C33#	O	/
C24#	O	/	C34#	O	/
C25#	O	/	C35#	O	/
C26#	O	/	C36#	O	/
C27#	O	/	C37#	O	/
C28#	O	/	C38#	O	/
C29#	O	/	C39#	O	/
C30#	O	/	C40#	O	/
注: D-解体; R-破裂; F-起火; O-无解体、无破裂、无起火。 Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture & No Fire.					

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样品图片

Photo of the sample



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The test report is invalid without the official stamp of IQTC.

2. 本报告无批准人、审核人及主检人签名无效。

The test report is invalid without the signatures of Approver, Checker and Appraiser.

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The client should provide samples and relevant data, at the same time, they should guarantee the consistence of the product's name they declared, the samples they provided and the goods to be transported. Otherwise we will not bear any relevant responsibilities.

5. 对检验报告若有异议, 应于收到报告之日起十五天内向检验单位提出。

Objection to the test report must be submitted to IQTC within 15 days

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Inspection Address: Room C102, No.1 Nanxiangzhi Road, Science City, Guangzhou, Guangdong, China (Light Industry Testing Laboratory in Science City)

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1.2 米跌落测试报告

1.2m Drop Test Report

样品名称： 锂离子电池

Sample Name: Rechargeable Lithium-ion Battery Pack

委托单位： 深圳市比亚迪锂电池有限公司

Applicant: Shenzhen BYD Lithium Battery Company Limited



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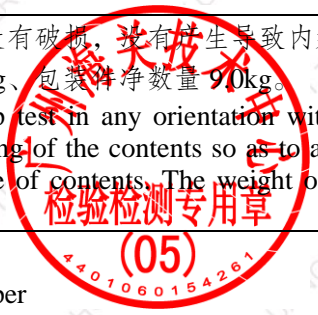
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检测证书 TEST REPORT

样品名称 Sample Name	锂离子电池 Rechargeable Lithium-ion Battery Pack		
型号 Model	TLp048A1		
委托单位 Applicant	深圳市比亚迪锂电池有限公司 Shenzhen BYD Lithium Battery Company Limited		
委托单位地址 Applicant Address	中国广东省深圳市龙岗区龙岗街道宝龙工业城宝荷路 3001 号 No.3001,Baohe Road,Baolong Industry Zone,Longgang Street, Longgang, Shenzhen, Guangdong Province, P.R. China		
生产单位 Manufacture	深圳市比亚迪锂电池有限公司 Shenzhen BYD Lithium Battery Company Limited		
生产单位地址 Manufacture Address	中国广东省深圳市龙岗区龙岗街道宝龙工业城宝荷路 3001 号 No.3001,Baohe Road,Baolong Industry Zone,Longgang Street, Longgang, Shenzhen, Guangdong Province, P.R. China		
测试方法和判定标准 Test method and criterion	联合国《关于危险货物运输的建议书 规章范本》(第 21 修订版) 特殊规定 188 条 UNITED NATIONS Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations (Rev. 21) special provisions 188		
样品外观 Appearance	该样品为固体, 标称电压为 3.85V, 额定电容量为 4850mAh。 The battery is solid. The Nominal Voltage is 3.85V, The Rated Capacity is 4850mAh.		
包装情况说明 Packing method	长方形瓦楞纸箱 (475mm*390mm*315mm), 内装 136 颗锂电池。 Rectangle corrugated carton (475mm*390mm*315mm), containing 136 lithium ion batteries.		
接样时间 Accepted date	2020-03-13	测试日期 Test date	2020-03-13~2020-04-08
检测项目 Test items	1.2m 跌落试验, 包装件毛重和净数量测试。 1.2m Drop test, Gross mass Measure, Net quantity of lithium ion cells or batteries per package Measure		
检验结论 Conclusion	被测试包装件能够承受 1.2 米跌落试验, 其内装的电池没有破损, 没有发生导致内装电池的直接接触的移动及内容物泄露, 该包装件毛重 14.3kg, 包装件净数量 9.0kg。 The tested package is capable of withstanding a 1.2m drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery or cell to cell contact and without release of contents. The weight of the package is 14.3kg (Gross mass, 9.0kg (net quantity).		
备注 Remark	内包装: 瓦楞纸格栅。 Inner package: corrugated paper		



批准

Approver:

[Signature]

审核

Checker:

[Signature]

主检

Appraiser:

[Signature]

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序号 No.	检验项目名称 Name of test	标准要求或标准条款号 Standard requirement or the clause of standard	检测结果 Test result		本项结论 Test conclusion	备注 Remark
1	1.2 米跌落试验 1.2m Drop test	联合国《关于危险货物运输的 建议书 规章范本》(第 21 修订 版)特殊规定 188 条 UNITED NATIONS Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations (Rev. 21) special provisions 188	面跌落 (顶部、底部、 长侧面、短侧面) Surface Drop (Top, Bottom, Long side, Short side)	包装未破损,内 装物完好。 The package is not cracked, the contents are not damaged and not shifted.	合格 Passed	/
			角跌落 Corner Drop	包装未破损,内 装物完好。 The package is not cracked, the contents are not damaged and not shifted.	合格 Passed	
2	包装件毛重测试 Gross mass Measure 净数量测试 Net quantity of lithium ion cells or batteries per package Measure	联合国《关于危险货物运输的 建议书 规章范本》(第 21 修订 版)特殊规定 188 条 UNITED NATIONS Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations (Rev. 21) special provisions 188	毛重 Gross mass 14.3Kg		合格 Passed	/
			净数量 Net Quantity 9.0Kg			
检验环境条件 Test environment condition		环境温度: 20°C-23°C; 环境湿度: 55%-65% Ambient temperature: 20°C-23°C; Ambient humidity: 55%-65%				
分包检验情况 Subcontracted test condition		检验项目 Test items	/			
		分包实验室 Subcontracted Laboratory	名称 Name	/	邮编 Post code	/
地址 Address	/		电话 Tel	/		

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包装件与产品/Package & product



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2. 本报告无批准人、审核人及主检人签名无效。

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4. 客户必须如实提供样品及资料，并保证申报品名和样品以及运输货物相同，否则本检测单位不承担任何相关责任。

The client should provide samples and relevant data, at the same time, they should guarantee the consistence of the product's name they declared, the samples they provided and the goods to be transported. Otherwise we will not bear any relevant responsibilities.

5. 对检验报告若有异议，应于收到报告之日起十五天内向检验单位提出。

Objection to the test report must be submitted to IQTC within 15 days

6. 本报告仅对送检样品负责。

The test report is valid for the tested samples only.

7. 检验地址：广东省广州市科学城南翔支路1号C102房（轻工科学城实验室）

Inspection Address: Room C102, No.1 Nanxiangzhi Road, Science City, Guangzhou, Guangdong, China (Light Industry Testing Laboratory in Science City)

电话(Tel): 020-38669019

电子邮箱(E-mail): itl@iqtc.cn

* * * * 报告结束 End of report * * * *

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1.2 米跌落测试报告 1.2m Drop Test Report

样品名称: 锂离子电池

Sample Name: Rechargeable Lithium-ion Battery Pack

委托单位: 深圳市比亚迪锂电池有限公司

Applicant: Shenzhen BYD Lithium Battery Company Limited



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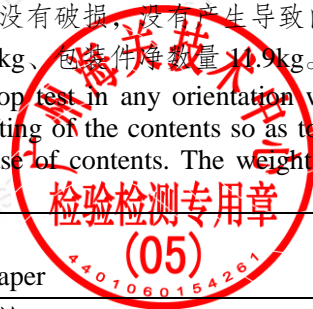
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检测证书 TEST REPORT

样品名称 Sample Name	锂离子电池 Rechargeable Lithium-ion Battery Pack		
型号 Model	TLp048A1		
委托单位 Applicant	深圳市比亚迪锂电池有限公司 Shenzhen BYD Lithium Battery Company Limited		
委托单位地址 Applicant Address	中国广东省深圳市龙岗区龙岗街道宝龙工业城宝荷路 3001 号 No.3001,Baohe Road,Baolong Industry Zone,Longgang Street, Longgang, Shenzhen, Guangdong Province, P.R. China		
生产单位 Manufacture	深圳市比亚迪锂电池有限公司 Shenzhen BYD Lithium Battery Company Limited		
生产单位地址 Manufacture Address	中国广东省深圳市龙岗区龙岗街道宝龙工业城宝荷路 3001 号 No.3001,Baohe Road,Baolong Industry Zone,Longgang Street, Longgang, Shenzhen, Guangdong Province, P.R. China		
测试方法和判定标准 Test method and criterion	联合国《关于危险货物运输的建议书 规章范本》(第 21 修订版) 特殊规定 188 条 UNITED NATIONS Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations (Rev. 21) special provisions 188		
样品外观 Appearance	该样品为固体, 标称电压为 3.85V, 额定电容量为 4850mAh。 The battery is solid. The Nominal Voltage is 3.85V, The Rated Capacity is 4850mAh.		
包装情况说明 Packing method	长方形瓦楞纸箱 (396mm*328mm*200mm), 内装 180 颗锂电池。 Rectangle corrugated carton (396mm*328mm*200mm), containing 180 lithium ion batteries.		
接样时间 Accepted date	2020-03-13	测试日期 Test date	2020-03-13~2020-04-08
检测项目 Test items	1.2m 跌落试验, 包装件毛重和净数量测试。 1.2m Drop test, Gross mass Measure, Net quantity of lithium ion cells or batteries per package Measure		
检验结论 Conclusion	被测试包装件能够承受 1.2 米跌落试验, 其内装的电池没有破损, 没有产生导致内装电池的直接接触的移动及内容物泄露, 该包装件毛重 15.1kg, 包装件净数量 11.9kg。 The tested package is capable of withstanding a 1.2m drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery or cell to cell contact and without release of contents. The weight of the package is 15.1kg (Gross mass, 11.9kg (net quantity)).		
备注 Remark	内包装: 瓦楞纸格栅。 Inner package: corrugated paper		



批准

Approver:

[Signature]

审核

Checker:

[Signature]

主检

Appraiser:

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序号 No.	检验项目名称 Name of test	标准要求或标准条款号 Standard requirement or the clause of standard	检测结果 Test result		本项结论 Test conclusion	备注 Remark
1	1.2 米跌落试验 1.2m Drop test	联合国《关于危险货物运输的 建议书 规章范本》(第 21 修订 版)特殊规定 188 条 UNITED NATIONS Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations (Rev. 21) special provisions 188	面跌落 (顶部、底部、 长侧面、短侧面) Surface Drop (Top, Bottom, Long side, Short side)	包装未破损,内 装物完好。 The package is not cracked, the contents are not damaged and not shifted.	合格 Passed	/
			角跌落 Corner Drop	包装未破损,内 装物完好。 The package is not cracked, the contents are not damaged and not shifted.		
2	包装件毛重测试 Gross mass Measure 净数量测试 Net quantity of lithium ion cells or batteries per package Measure	联合国《关于危险货物运输的 建议书 规章范本》(第 21 修订 版)特殊规定 188 条 UNITED NATIONS Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations (Rev. 21) special provisions 188	毛重 Gross mass 15.1Kg		合格 Passed	/
			净数量 Net Quantity 11.9Kg			
检验环境条件 Test environment condition		环境温度: 20℃-23℃; 环境湿度: 55%-65% Ambient temperature: 20℃-23℃; Ambient humidity: 55%-65%				
分包检验情况 Subcontracted test condition		检验项目 Test items	/			
		分包实验室 Subcontracted Laboratory	名称 Name	/	邮编 Post code	/
			地址 Address	/	电话 Tel	/

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7. 检验地址：广东省广州市科学城南翔支路1号C102房（轻工科学城实验室）

Inspection Address: Room C102, No.1 Nanxiangzhi Road, Science City, Guangzhou, Guangdong, China (Light Industry Testing Laboratory in Science City)

电话(Tel): 020-38669019

电子邮箱(E-mail): itl@iqtc.cn

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