



UN38.3 测试报告

UN38.3 Test Report

样品名称:	可充电锂离子电池 ARB-L18-3500U
Sample Name:	Rechargeable Li-ion Battery ARB-L18-3500U
型号规格:	ARB-L18-3500U 3.6V 3500mAh 12.6Wh
Model:	
委托单位:	深圳市朗恒电子有限公司
Applicant:	SHEN ZHEN LANG HENG ELECTRONIC CO.,LTD
检验项目:	高度模拟、温度试验、振动、冲击、外部短路、撞击、过度充电、强制放电
Test Items:	Altitude simulation, Thermal test, Vibration, Shock, External short circuit, Impact, Overcharge, Forced discharge
检验类别:	委托检验
Test Category:	Commission test

北京迪捷姆空运技术开发有限公司
Beijing DGM Air Transport Technology Co., Ltd.

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样品名称 Sample Name	可充电锂离子电池 ARB-L18-3500U		商标 Trademark	FENIX
	Rechargeable Li-ion Battery ARB-L18-3500U		型号/规格 Model	ARB-L18-3500U 3.6V 3500mAh12.6Wh
委托单位 Applicant	名称 Name	深圳市朗恒电子有限公司 SHEN ZHEN LANG HENG ELECTRONIC CO.,LTD		
	地址 Address	深圳市宝安区 33 区东方明工业城二栋八楼 8/F, 2nd Building, DongFangMing Industrial Center, 33rd District, Bao'an, Shenzhen		
生产厂家 Manufacturer	深圳市优能电源技术有限公司 SHENZHEN YOUR POWER TECHNOLOGY CO.,LTD.			
来样方式 Means of Receiving	委托方送样 Submitted by applicant		送样日期 Accepted Date	2017-01-10
检验日期 Test Date	2017-01-10~2017-02-14			
检验地点 Test Site	本检测室（电池室） DGM(Battery room)			
检验项目 Test Items	高度模拟、温度试验、振动、冲击、外部短路、撞击、过度充电、强制放电 Altitude simulation, Thermal test, Vibration, Shock, External short circuit, Impact, Overcharge, Forced discharge			
检验依据 Test Method	联合国《关于危险货物运输的建议书-试验和标准手册》（第 6 版）38.3 节 UN Recommendations on the Transport of Dangerous Goods Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/ Subsection 38.3			
样品状态 Appearance	黑色圆柱体单芯电池，约 $\Phi 23.49 \times 74.83$ mm。 Black cylinder single cell battery, about $\Phi 23.49 \times 74.83$ mm.			
检验结论 Conclusion	<p>根据联合国《关于危险货物运输的建议书-试验和标准手册》（第 6 版）38.3 节的规定，该电池样品通过所有项目检测，符合该条款的性能要求。</p> <p>The samples have passed all test items of UN Recommendations on the Transport of Dangerous Goods - Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/ Subsection 38.3.</p>			
备注 Comment	单芯电池。 Single cell battery.			

检测：
Tested by:

罗晓峰

审核：
Checked by:

宋明

批准：
Approved by:

冯海

北京迪捷姆空运技术开发有限公司
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序号 No.	检验项目 Test Items	标准要求或标准条款 Standard Requirement or the Clause of Standard	检验结果 Test Result	单项评价 Conclusion	备注 Remark
1	高度模拟 Altitude Simulation	ST/SG/AC.10/11/Rev.6/ Subsection 38.3 Test T.1	无泄漏、无排气、无解体、无破裂、无起火， 试验后的开路电压不低于试验前的 90%。 No leakage, no venting, no disassembly, no rupture and no fire. The open circuit voltage of each battery after testing is not less than 90% of its voltage immediately prior to this procedure.	符合 Pass	/
2	温度试验 Thermal Test	ST/SG/AC.10/11/Rev.6/ Subsection 38.3 Test T.2	无泄漏、无排气、无解体、无破裂、无起火， 试验后的开路电压不低于试验前的 90%。 No leakage, no venting, no disassembly, no rupture and no fire. The open circuit voltage of each battery after testing is not less than 90% of its voltage immediately prior to this procedure.	符合 Pass	/
3	振动 Vibration	ST/SG/AC.10/11/Rev.6/ Subsection 38.3 Test T.3	无泄漏、无排气、无解体、无破裂、无起火， 试验后的开路电压不低于试验前的 90%。 No leakage, no venting, no disassembly, no rupture and no fire. The open circuit voltage of each battery after testing is not less than 90% of its voltage immediately prior to this procedure.	符合 Pass	/
4	冲击 Shock	ST/SG/AC.10/11/Rev.6/ Subsection 38.3 Test T.4	无泄漏、无排气、无解体、无破裂、无起火， 试验后的开路电压不低于试验前的 90%。 No leakage, no venting, no disassembly, no rupture and no fire. The open circuit voltage of each battery after testing is not less than 90% of its voltage immediately prior to this procedure.	符合 Pass	/
5	外部短路 External Short Circuit	ST/SG/AC.10/11/Rev.6/ Subsection 38.3 Test T.5	外壳温度不超过 170 °C，无解体、无破裂、无 起火。 External temperature does not exceed 170°C. No disassembly, no rupture and no fire.	符合 Pass	/
6	撞击 Impact	ST/SG/AC.10/11/Rev.6/ Subsection 38.3 Test T.6	外壳温度不超过 170 °C，无解体、无起火。 External temperature does not exceed 170°C. No disassembly, no fire.	符合 Pass	/
7	过度充电 Overcharge	ST/SG/AC.10/11/Rev.6/ Subsection 38.3 Test T.7	无解体、无起火。 No disassembly, no fire.	符合 Pass	/
8	强制放电 Forced Discharge	ST/SG/AC.10/11/Rev.6/ Subsection 38.3 Test T.8	无解体、无起火。 No disassembly, no fire.	符合 Pass	/
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T.1: 高度模拟

T.1: Altitude Simulation

样品编号 Sample No.	样品状态 Sample Status	测试前		测试后				有无泄漏、排气、解体、破裂、起火 Leakage, Venting, Disassembly, Rupture, Fire(Yes/No)
		Pre-test		After-test				
		质量 Mass $m_1(g)$	开路电压 OCV $V_1(V)$	质量 Mass $m_2(g)$	质量损失 Mass Loss (%)	开路电压 OCV $V_2(V)$	剩余电压 Residual OCV (%)	
A1	首次完全充电 First cycle fully charged	49.811	4.168	49.809	0.004	4.158	99.76	No
A2	首次完全充电 First cycle fully charged	49.855	4.170	49.854	0.002	4.160	99.76	No
A3	首次完全充电 First cycle fully charged	49.627	4.171	49.626	0.002	4.161	99.76	No
A4	首次完全充电 First cycle fully charged	49.723	4.172	49.721	0.004	4.163	99.78	No
A5	首次完全充电 First cycle fully charged	49.799	4.168	49.799	0.000	4.158	99.76	No
A6	首次完全充电 First cycle fully charged	49.999	4.170	49.999	0.000	4.161	99.78	No
A7	首次完全充电 First cycle fully charged	49.775	4.170	49.774	0.002	4.160	99.76	No
A8	首次完全充电 First cycle fully charged	49.742	4.167	49.741	0.002	4.156	99.74	No
A9	首次完全充电 First cycle fully charged	49.929	4.176	49.929	0.000	4.158	99.57	No
A10	首次完全充电 First cycle fully charged	49.801	4.168	49.801	0.000	4.158	99.76	No

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T.2: 温度试验

T.2: Thermal Test

样品编号 Sample No.	样品状态 Sample Status	测试前 Pre-test		测试后 After-test				有无泄漏、排气、 解体、破裂、起火 Leakage, Venting, Disassembly, Rupture, Fire(Yes/No)
		质量 Mass	开路电压 OCV	质量 Mass	质量损失 Mass Loss	开路电压 OCV	剩余电压 Residual	
		m ₁ (g)	V ₁ (V)	m ₂ (g)	(%)	V ₂ (V)	OCV (%)	
A1	首次完全充电 First cycle fully charged	49.809	4.158	49.808	0.002	4.094	98.46	No
A2	首次完全充电 First cycle fully charged	49.854	4.160	49.854	0.000	4.094	98.41	No
A3	首次完全充电 First cycle fully charged	49.626	4.161	49.626	0.000	4.094	98.41	No
A4	首次完全充电 First cycle fully charged	49.721	4.163	49.720	0.002	4.095	98.37	No
A5	首次完全充电 First cycle fully charged	49.799	4.158	49.799	0.000	4.095	98.48	No
A6	首次完全充电 First cycle fully charged	49.999	4.161	49.999	0.000	4.095	98.41	No
A7	首次完全充电 First cycle fully charged	49.774	4.160	49.774	0.000	4.094	98.41	No
A8	首次完全充电 First cycle fully charged	49.741	4.156	49.741	0.000	4.093	98.48	No
A9	首次完全充电 First cycle fully charged	49.929	4.158	49.929	0.000	4.095	98.48	No
A10	首次完全充电 First cycle fully charged	49.801	4.158	49.800	0.002	4.095	98.48	No
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T.3: 振动

T.3: Vibration

样品编号 Sample No.	样品状态 Sample Status	测试前 Pre-test		测试后 After-test				有无泄漏、排气、 解体、破裂、起火 Leakage, Venting, Disassembly, Rupture, Fire(Yes/No)
		质量 Mass	开路电压 OCV	质量 Mass	质量损失 Mass Loss	开路电压 OCV	剩余电压 Residual	
		m ₁ (g)	V ₁ (V)	m ₂ (g)	(%)	V ₂ (V)	OCV (%)	
A1	首次完全充电 First cycle fully charged	49.808	4.094	49.808	0.027	4.094	100.00	No
A2	首次完全充电 First cycle fully charged	49.854	4.094	49.848	0.027	4.094	100.00	No
A3	首次完全充电 First cycle fully charged	49.626	4.094	49.620	0.005	4.094	100.00	No
A4	首次完全充电 First cycle fully charged	49.720	4.095	49.713	0.021	4.095	100.00	No
A5	首次完全充电 First cycle fully charged	49.799	4.095	49.792	0.005	4.095	100.00	No
A6	首次完全充电 First cycle fully charged	49.999	4.095	49.989	0.038	4.095	100.00	No
A7	首次完全充电 First cycle fully charged	49.774	4.094	49.765	0.016	4.094	100.00	No
A8	首次完全充电 First cycle fully charged	49.741	4.093	49.731	0.016	4.093	100.00	No
A9	首次完全充电 First cycle fully charged	49.929	4.095	49.921	0.027	4.095	100.00	No
A10	首次完全充电 First cycle fully charged	49.800	4.095	49.791	0.027	4.095	100.00	No
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T.4: 冲击

T.4: Shock

样品编号 Sample No.	样品状态 Sample Status	测试前 Pre-test		测试后 After-test				有无泄漏、排气、 解体、破裂、起火 Leakage, Venting, Disassembly, Rupture, Fire(Yes/No)
		质量 Mass $m_1(g)$	开路电压 OCV $V_1(V)$	质量 Mass $m_2(g)$	质量损失 Mass Loss (%)	开路电压 OCV $V_2(V)$	剩余电压 Residual OCV (%)	
A1	首次完全充电 First cycle fully charged	49.808	4.094	49.808	0.000	4.094	100.00	No
A2	首次完全充电 First cycle fully charged	49.848	4.094	49.848	0.000	4.094	100.00	No
A3	首次完全充电 First cycle fully charged	49.620	4.094	49.610	0.020	4.094	100.00	No
A4	首次完全充电 First cycle fully charged	49.713	4.095	49.712	0.002	4.095	100.00	No
A5	首次完全充电 First cycle fully charged	49.792	4.095	49.792	0.022	4.095	100.00	No
A6	首次完全充电 First cycle fully charged	49.989	4.095	49.989	0.000	4.095	100.00	No
A7	首次完全充电 First cycle fully charged	49.765	4.094	49.765	0.000	4.094	100.00	No
A8	首次完全充电 First cycle fully charged	49.731	4.093	49.729	0.004	4.093	100.00	No
A9	首次完全充电 First cycle fully charged	49.921	4.095	49.918	0.006	4.094	99.76	No
A10	首次完全充电 First cycle fully charged	49.791	4.095	49.789	0.004	4.095	100.00	No

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T.5: 外部短路**T.5: External Short Circuit**

样品编号 Sample No	样品状态 Sample Status	样品表面最高温度(°C) Highest External Temperature/°C	有无解体、破裂、起火 Disassembly, Rupture, Fire(Yes/No)
A1	首次完全充电 First cycle fully charged	58.9	No
A2	首次完全充电 First cycle fully charged	58.6	No
A3	首次完全充电 First cycle fully charged	58.2	No
A4	首次完全充电 First cycle fully charged	59.3	No
A5	首次完全充电 First cycle fully charged	59.5	No
A6	首次完全充电 First cycle fully charged	58.7	No
A7	首次完全充电 First cycle fully charged	58.1	No
A8	首次完全充电 First cycle fully charged	58.3	No
A9	首次完全充电 First cycle fully charged	59.8	No
A10	首次完全充电 First cycle fully charged	58.6	No
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T.6: 撞击

T.6: Impact

样品编号 Sample No.	样品状态 Sample Status	样品表面最高温度(°C) Highest External Temperature/°C	有无解体、起火 Disassembly, Fire(Yes/No)
B1	首次 50%容量 First cycle charged 50% rated capacity	125.6	No
B2	首次 50%容量 First cycle charged 50% rated capacity	117.3	No
B3	首次 50%容量 First cycle charged 50% rated capacity	106.9	No
B4	首次 50%容量 First cycle charged 50% rated capacity	107.2	No
B5	首次 50%容量 First cycle charged 50% rated capacity	105.9	No
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T.7: 过度充电

T.7: Overcharge

样品编号 Sample No.	样品状态 Sample Status	有无解体、起火 Disassembly, Fire(Yes/No)
C1	首次完全充电 First cycle fully charged	No
C2	首次完全充电 First cycle fully charged	No
C3	首次完全充电 First cycle fully charged	No
C4	首次完全充电 First cycle fully charged	No
C5	50 次完全充电 50 cycles fully charged	No
C6	50 次完全充电 50 cycles fully charged	No
C7	50 次完全充电 50 cycles fully charged	No
C8	50 次完全充电 50 cycles fully charged	No
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T.8: 强制放电

T.8: Forced Discharge

样品编号 Sample No.	样品状态 Sample Status	有无解体、起火 Disassembly, Fire(Yes/No)
D1	首次完全放电 First cycle fully discharged	No
D2	首次完全放电 First cycle fully discharged	No
D3	首次完全放电 First cycle fully discharged	No
D4	首次完全放电 First cycle fully discharged	No
D5	首次完全放电 First cycle fully discharged	No
D6	首次完全放电 First cycle fully discharged	No
D7	首次完全放电 First cycle fully discharged	No
D8	首次完全放电 First cycle fully discharged	No
D9	首次完全放电 First cycle fully discharged	No
D10	首次完全放电 First cycle fully discharged	No
D11	50次完全放电 50 cycles fully discharged	No
D12	50次完全放电 50 cycles fully discharged	No
D13	50次完全放电 50 cycles fully discharged	No
D14	50次完全放电 50 cycles fully discharged	No
D15	50次完全放电 50 cycles fully discharged	No
D16	50次完全放电 50 cycles fully discharged	No
D17	50次完全放电 50 cycles fully discharged	No
D18	50次完全放电 50 cycles fully discharged	No
D19	50次完全放电 50 cycles fully discharged	No
D20	50次完全放电 50 cycles fully discharged	No
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电池照片

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