



UN38.3 测试报告

UN38.3 Test Report

| | |
|----------------|--|
| 样品名称: | 可充电锂离子电池 ARB-L16-700 |
| Sample Name | Rechargeable Li-ion Battery ARB-L16-700 |
| 型号规格: | ARB-L16-700 3.7V 700mAh 2.59Wh |
| 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、挤压、过度充电、强制放电 |
| Test Items: | Altitude simulation, Thermal test, Vibration, Shock, External short circuit, Crush, 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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1. 本公司依据委托人（托运人或其代理人）提供的物品，做出检测并出具此报告书。
The report is issued by DGM China according to the test of the goods and the information of its shipping provided by the applicant (shipper or his agent).
2. 依据检测的需要，本公司要求委托人提供真实、完整的货物样品及资料。
According to the demand of test, DGM China requires the applicant to provide true and exact sample and data of the cargo.
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The applicant guarantees that the declared goods and/or the sample who provides should be identical with the contents of cargo that is to be transported.
4. 本公司仅对样品的检测结果负责。
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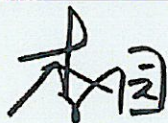
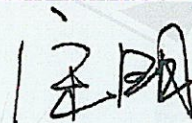
Beijing DGM Air Transport Technology Co., Ltd.

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| | | | | |
|----------------------------|---|--|-----------------|--------------------------------|
| 样品名称 Sample Name | 可充电锂离子电池 ARB-L16-700 Rechargeable Li-ion Battery ARB-L16-700 | | 商标 Trademark | FENIX |
| | | | 型号/规格 Model | ARB-L16-700 3.7V 700mAh 2.59Wh |
| 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 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 | 2015-06-15 | |
| 检验日期 Test Date | 2015-06-15~2015-07-06 | | | |
| 检验地点 Test Site | 本检测室（电池室） DGM(Battery room, Beijing) | | | |
| 检验项目 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 | | | |
| 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 5 版修正 1、修正 2）38.3 节 UN Recommendations on the Transport of Dangerous Goods Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5/Amend.1 and Amend.2 Subsection 38.3 | | | |
| 样品状态 Appearance | 黑色圆柱体电池，约 $\Phi 16.6\text{mm} \times 33.1\text{mm}$ 。 Black cylindrical battery, about $\Phi 16.6\text{mm} \times 33.1\text{mm}$. | | | |
| 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 5 版修正 1、修正 2）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.5/Amend.1 and Amend.2 Subsection 38.3.</p> <p style="text-align: right;">检验单位(盖章) Test Lab(Stamp) 签发日期：2015 年 07 月 09 日</p> | | | |
| 备注 Comment | 可充电单电芯电池。 Rechargeable single cell battery. | | | |

检测：
Tested by:

审核：
Checked by:

批准：
Approved by:

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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| 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.5/Amend. 1 and Amend.2 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.5/Amend. 1 and Amend.2 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.5/Amend. 1 and Amend.2 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.5/Amend. 1 and Amend.2 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.5/Amend. 1 and Amend.2 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 | 挤压 Crush | ST/SG/AC.10/11/Rev.5/Amend. 1 and Amend.2 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.5/Amend. 1 and Amend.2 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.5/Amend. 1 and Amend.2 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

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| 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 | 17.480 | 4.197 | 17.480 | 0.000 | 4.195 | 99.95 | No |
| A2 | 首次完全充电 First cycle fully charged | 17.517 | 4.198 | 17.516 | 0.006 | 4.195 | 99.93 | No |
| A3 | 首次完全充电 First cycle fully charged | 17.712 | 4.198 | 17.710 | 0.011 | 4.197 | 99.98 | No |
| A4 | 首次完全充电 First cycle fully charged | 17.439 | 4.196 | 17.437 | 0.011 | 4.194 | 99.95 | No |
| A5 | 首次完全充电 First cycle fully charged | 17.776 | 4.197 | 17.774 | 0.011 | 4.193 | 99.90 | No |
| A6 | 首次完全充电 First cycle fully charged | 17.285 | 4.198 | 17.284 | 0.006 | 4.195 | 99.93 | No |
| A7 | 首次完全充电 First cycle fully charged | 17.465 | 4.199 | 17.464 | 0.006 | 4.196 | 99.93 | No |
| A8 | 首次完全充电 First cycle fully charged | 17.765 | 4.197 | 17.765 | 0.000 | 4.194 | 99.93 | No |
| A9 | 首次完全充电 First cycle fully charged | 17.761 | 4.197 | 17.760 | 0.006 | 4.195 | 99.95 | No |
| A10 | 首次完全充电 First cycle fully charged | 17.345 | 4.200 | 17,344 | 0.006 | 4.195 | 99.88 | No |
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T.2: 温度试验

T.2: Thermal Test

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| 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 | 17.480 | 4.195 | 17.480 | 0.000 | 4.050 | 96.54 | No |
| A2 | 首次完全充电 First cycle fully charged | 17.516 | 4.195 | 17.515 | 0.006 | 4.073 | 97.09 | No |
| A3 | 首次完全充电 First cycle fully charged | 17.710 | 4.197 | 17.710 | 0.000 | 4.055 | 96.62 | No |
| A4 | 首次完全充电 First cycle fully charged | 17.437 | 4.194 | 17.436 | 0.006 | 4.075 | 97.16 | No |
| A5 | 首次完全充电 First cycle fully charged | 17.774 | 4.193 | 17.774 | 0.000 | 4.007 | 95.56 | No |
| A6 | 首次完全充电 First cycle fully charged | 17.284 | 4.195 | 17.283 | 0.006 | 4.065 | 96.90 | No |
| A7 | 首次完全充电 First cycle fully charged | 17.464 | 4.196 | 17.464 | 0.000 | 4.075 | 97.17 | No |
| A8 | 首次完全充电 First cycle fully charged | 17.765 | 4.194 | 17.764 | 0.006 | 4.078 | 97.23 | No |
| A9 | 首次完全充电 First cycle fully charged | 17.760 | 4.195 | 17.760 | 0.000 | 4.075 | 97.14 | No |
| A10 | 首次完全充电 First cycle fully charged | 17.344 | 4.195 | 17.343 | 0.006 | 4.068 | 96.97 | No |

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T.3: 振动

T.3: Vibration

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| 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 | 17.480 | 4.050 | 17.480 | 0.000 | 4.050 | 100.00 | No |
| A2 | 首次完全充电 First cycle fully charged | 17.515 | 4.073 | 17.512 | 0.017 | 4.072 | 99.98 | No |
| A3 | 首次完全充电 First cycle fully charged | 17.710 | 4.055 | 17.710 | 0.000 | 4.055 | 100.00 | No |
| A4 | 首次完全充电 First cycle fully charged | 17.436 | 4.075 | 17.436 | 0.000 | 4.075 | 100.00 | No |
| A5 | 首次完全充电 First cycle fully charged | 17.774 | 4.007 | 17.774 | 0.000 | 4.007 | 100.00 | No |
| A6 | 首次完全充电 First cycle fully charged | 17.283 | 4.065 | 17.283 | 0.000 | 4.065 | 100.00 | No |
| A7 | 首次完全充电 First cycle fully charged | 17.464 | 4.075 | 17.464 | 0.000 | 4.075 | 100.00 | No |
| A8 | 首次完全充电 First cycle fully charged | 17.764 | 4.078 | 17.764 | 0.000 | 4.078 | 100.00 | No |
| A9 | 首次完全充电 First cycle fully charged | 17.760 | 4.075 | 17.760 | 0.000 | 4.075 | 100.00 | No |
| A10 | 首次完全充电 First cycle fully charged | 17.343 | 4.068 | 17.343 | 0.000 | 4.068 | 100.00 | No |

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T.4: 冲击

T.4: Shock

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| 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 | 17.480 | 4.050 | 17.480 | 0.000 | 4.050 | 100.00 | No |
| A2 | 首次完全充电 First cycle fully charged | 17.512 | 4.072 | 17.512 | 0.000 | 4.072 | 100.00 | No |
| A3 | 首次完全充电 First cycle fully charged | 17.710 | 4.055 | 17.710 | 0.000 | 4.055 | 100.00 | No |
| A4 | 首次完全充电 First cycle fully charged | 17.436 | 4.075 | 17.432 | 0.023 | 4.075 | 100.00 | No |
| A5 | 首次完全充电 First cycle fully charged | 17.774 | 4.007 | 17.774 | 0.000 | 4.005 | 99.95 | No |
| A6 | 首次完全充电 First cycle fully charged | 17.283 | 4.065 | 17.283 | 0.000 | 4.065 | 100.00 | No |
| A7 | 首次完全充电 First cycle fully charged | 17.464 | 4.075 | 17.464 | 0.000 | 4.075 | 100.00 | No |
| A8 | 首次完全充电 First cycle fully charged | 17.764 | 4.078 | 17.764 | 0.000 | 4.078 | 100.00 | No |
| A9 | 首次完全充电 First cycle fully charged | 17.760 | 4.075 | 17.760 | 0.000 | 4.075 | 100.00 | No |
| A10 | 首次完全充电 First cycle fully charged | 17.343 | 4.068 | 17.343 | 0.000 | 4.068 | 100.00 | No |

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T.5: 外部短路

T.5: External Short Circuit

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| 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 | <57.0 | No |
| A2 | 首次完全充电 First cycle fully charged | <57.0 | No |
| A3 | 首次完全充电 First cycle fully charged | <57.0 | No |
| A4 | 首次完全充电 First cycle fully charged | <57.0 | No |
| A5 | 首次完全充电 First cycle fully charged | <57.0 | No |
| A6 | 首次完全充电 First cycle fully charged | <57.0 | No |
| A7 | 首次完全充电 First cycle fully charged | <57.0 | No |
| A8 | 首次完全充电 First cycle fully charged | <57.0 | No |
| A9 | 首次完全充电 First cycle fully charged | <57.0 | No |
| A10 | 首次完全充电 First cycle fully charged | <57.0 | No |

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T.6: 挤压

T.6: Crush

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| 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 | 102.1 | No |
| B2 | 首次 50%容量 First cycle charged 50% rated capacity | 92.7 | No |
| B3 | 首次 50%容量 First cycle charged 50% rated capacity | 98.7 | No |
| B4 | 首次 50%容量 First cycle charged 50% rated capacity | 100.4 | No |
| B5 | 首次 50%容量 First cycle charged 50% rated capacity | 118.9 | No |

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T.7: 过度充电**T.7: Overcharge**

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| 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

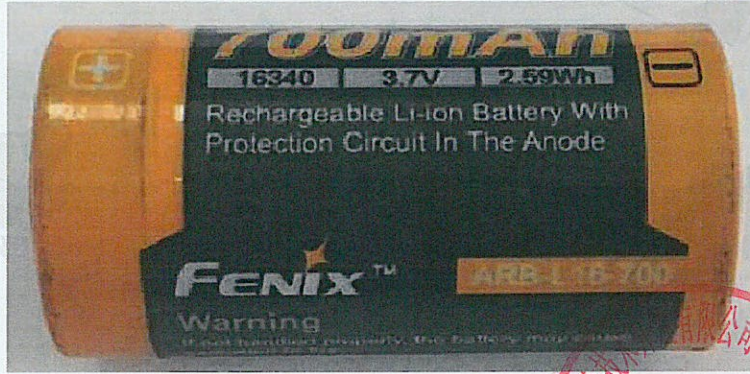
T.8: Forced Discharge

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| 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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UN38.3 测试报告

UN38.3 Test Report



电池照片

