



UN38.3 测试报告

UN38.3 Test Report

样品名称: 可充电锂离子电池 ARB-LP1300
Sample Name: Rechargeable Li-ion Battery ARB-LP1300

型号规格: ARB-LP1300 3.7V 1300mAh 4.81Wh
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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北京迪捷姆空运技术开发有限公司
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| | | | | |
|----------------------------|---|--|-----------------------|--------------------------------|
| 样品名称 Sample Name | 可充电锂离子电池 ARB-LP1300 Rechargeable Li-ion Battery ARB-LP1300 | | 商标 Trademark | FENIX |
| | | | 型号/规格 Model | ARB-LP1300 3.7V 1300mAh 4.81Wh |
| 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 | | |
| 来样方式 Means of Receiving | 委托方送样 Submitted by applicant | | 送样日期 Accepted Date | 2018.09.16 |
| 检验日期 Test Date | 2018.09.17-2018.10.13 | | | |
| 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、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 6 版修订一）38.3 节 UN Recommendations on the Transport of Dangerous Goods Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6 Amendment 1/ Subsection 38.3 | | | |
| 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 版修订一）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 Amendment 1/ Subsection 38.3.</p> <p style="text-align: right;">检验单位(盖章) Test Lab(Stamp)</p> <p style="text-align: right;">签发日期(Issue Date): 2018 年 10 月 24 日</p> | | | |

检测:

Tested by:

罗晓峰

审核:

Checked by:

宋明

批准:

Approved by:

冯海

| | | | |
|---------------------------------|---|--------------|--------------------|
| 电池信息 Information for battery | | | |
| 电芯生产厂家 Cell manufacturer | 深圳无限能源科技有限公司 SHENZHEN TOP ENERGY CO.,LTD | | |
| 电芯厂家联系电话 Phone number | +86-0755-89773011 | 邮箱 e-mail | // |
| 电芯厂家地址 Address | 深圳市龙岗葵涌街道奔康工业区 B16 栋 North, 3rd Floor, Building B16th, Penkang Industrial, Kuiyong, Longgang, Shenzhen, China | | |
| 电芯厂家网址 Website | // | | |
| Pack 厂家 Pack manufacturer | 深圳市优能电源技术有限公司 SHENZHEN YOUR POWER TECHNOLOGY CO.,LTD | | |
| Pack 厂家联系电话 Phone number | 13603018105 | 邮箱 e-mail | Sales@yourpower.cn |
| Pack 厂家地址 Address | 深圳市龙华区观澜街道盛德兰工业园办公楼 4 楼 4/F, Office Building SDL Industry Park, Longhua District, Shenzhen, China | | |
| Pack 厂家网址 Website | // | | |

| 电芯信息 Information for cell | | | |
|--------------------------------------|-------------------------|-------------------------------------|-----------------|
| 电芯型号 Cell model | LP103040A130 | | |
| 标称电压 Nominal Voltage | 3.7V | 额定容量 Rated Capacity | 1300mAh |
| 最大连续充电电流 Maximum charging current | 650mA | 最大放电电流 Maximum discharge current | 1300mA |
| 充电限制电压 Limited charging voltage | 4.2V | 放电截止电压 Cut-Off voltage | 2.75V |
| 外观形状 Appearance | 银色长方体 Silvery cuboid | 电芯尺寸 Cell size | 38.6×29.5×9.7mm |

| 电池信息 Information for battery | | | |
|--------------------------------------|-----------------------------------|-------------------------------------|-------------------------------|
| 最大连续充电电流 Maximum charging current | 650mA | 最大放电电流 Maximum discharge current | 1300mA |
| 充电限制电压 Limited charging voltage | 4.2V | 放电截止电压 Cut-Off voltage | 2.75V |
| 规格/型号 Model | ARB-LP1300 3.7V 1300mAh 4.81Wh | 电池尺寸 Battery size | 44.1×31.1×10.8mm |
| 组成电芯数量 Number of cell | 单电芯 Single cell | 外观形状 Appearance | 银白色长方体 Silver-white cuboid |

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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 Amendment 1/ 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 Amendment 1/ 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 Amendment 1/ 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 Amendment 1/ 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 Amendment 1/ 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.6 Amendment 1/ 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 Amendment 1/ 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 Amendment 1/ 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 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 | 31.371 | 4.163 | 31.362 | 0.029 | 4.156 | 99.83 | No |
| A2 | 首次完全充电 First cycle fully charged | 31.321 | 4.162 | 31.314 | 0.022 | 4.155 | 99.83 | No |
| A3 | 首次完全充电 First cycle fully charged | 30.904 | 4.167 | 30.895 | 0.029 | 4.163 | 99.90 | No |
| A4 | 首次完全充电 First cycle fully charged | 31.134 | 4.171 | 31.126 | 0.026 | 4.166 | 99.88 | No |
| A5 | 首次完全充电 First cycle fully charged | 31.462 | 4.168 | 31.456 | 0.019 | 4.161 | 99.83 | No |
| A6 | 25 次完全充电 25 cycles fully charged | 31.600 | 4.168 | 31.595 | 0.016 | 4.165 | 99.93 | No |
| A7 | 25 次完全充电 25 cycles fully charged | 31.648 | 4.173 | 31.641 | 0.022 | 4.170 | 99.93 | No |
| A8 | 25 次完全充电 25 cycles fully charged | 30.975 | 4.175 | 30.971 | 0.013 | 4.173 | 99.95 | No |
| A9 | 25 次完全充电 25 cycles fully charged | 31.516 | 4.170 | 31.511 | 0.016 | 4.167 | 99.93 | No |
| A10 | 25 次完全充电 25 cycles fully charged | 31.414 | 4.171 | 31.407 | 0.022 | 4.168 | 99.93 | 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 | 31.362 | 4.156 | 31.341 | 0.067 | 4.046 | 97.35 | No |
| A2 | 首次完全充电 First cycle fully charged | 31.314 | 4.155 | 31.295 | 0.061 | 4.041 | 97.26 | No |
| A3 | 首次完全充电 First cycle fully charged | 30.895 | 4.163 | 30.879 | 0.052 | 4.068 | 97.72 | No |
| A4 | 首次完全充电 First cycle fully charged | 31.126 | 4.166 | 31.102 | 0.077 | 4.065 | 97.58 | No |
| A5 | 首次完全充电 First cycle fully charged | 31.456 | 4.161 | 31.435 | 0.067 | 4.046 | 97.24 | No |
| A6 | 25 次完全充电 25 cycles fully charged | 31.595 | 4.165 | 31.573 | 0.070 | 4.066 | 97.62 | No |
| A7 | 25 次完全充电 25 cycles fully charged | 31.641 | 4.170 | 31.620 | 0.066 | 4.079 | 97.82 | No |
| A8 | 25 次完全充电 25 cycles fully charged | 30.971 | 4.173 | 30.949 | 0.071 | 4.079 | 97.75 | No |
| A9 | 25 次完全充电 25 cycles fully charged | 31.511 | 4.167 | 31.486 | 0.079 | 4.061 | 97.46 | No |
| A10 | 25 次完全充电 25 cycles fully charged | 31.407 | 4.168 | 31.389 | 0.057 | 4.063 | 97.48 | 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 | 31.341 | 4.046 | 31.328 | 0.041 | 4.043 | 99.93 | No |
| A2 | 首次完全充电 First cycle fully charged | 31.295 | 4.041 | 31.288 | 0.022 | 4.039 | 99.95 | No |
| A3 | 首次完全充电 First cycle fully charged | 30.879 | 4.068 | 30.869 | 0.032 | 4.065 | 99.93 | No |
| A4 | 首次完全充电 First cycle fully charged | 31.102 | 4.065 | 31.095 | 0.023 | 4.062 | 99.93 | No |
| A5 | 首次完全充电 First cycle fully charged | 31.435 | 4.046 | 31.427 | 0.025 | 4.044 | 99.95 | No |
| A6 | 25 次完全充电 25 cycles fully charged | 31.573 | 4.066 | 31.566 | 0.022 | 4.063 | 99.93 | No |
| A7 | 25 次完全充电 25 cycles fully charged | 31.620 | 4.079 | 31.613 | 0.022 | 4.069 | 99.75 | No |
| A8 | 25 次完全充电 25 cycles fully charged | 30.949 | 4.079 | 30.939 | 0.032 | 4.076 | 99.93 | No |
| A9 | 25 次完全充电 25 cycles fully charged | 31.486 | 4.061 | 31.477 | 0.029 | 4.059 | 99.95 | No |
| A10 | 25 次完全充电 25 cycles fully charged | 31.389 | 4.063 | 31.380 | 0.029 | 4.059 | 99.90 | 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 | 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 | 31.328 | 4.043 | 31.321 | 0.022 | 4.041 | 99.95 | No |
| A2 | 首次完全充电 First cycle fully charged | 31.288 | 4.039 | 31.282 | 0.019 | 4.038 | 99.98 | No |
| A3 | 首次完全充电 First cycle fully charged | 30.869 | 4.065 | 30.863 | 0.019 | 4.062 | 99.93 | No |
| A4 | 首次完全充电 First cycle fully charged | 31.095 | 4.062 | 31.089 | 0.019 | 4.060 | 99.95 | No |
| A5 | 首次完全充电 First cycle fully charged | 31.427 | 4.044 | 31.422 | 0.016 | 4.042 | 99.95 | No |
| A6 | 25次完全充电 25 cycles fully charged | 31.566 | 4.063 | 31.563 | 0.010 | 4.061 | 99.95 | No |
| A7 | 25次完全充电 25 cycles fully charged | 31.613 | 4.069 | 31.608 | 0.016 | 4.066 | 99.93 | No |
| A8 | 25次完全充电 25 cycles fully charged | 30.939 | 4.076 | 30.934 | 0.016 | 4.072 | 99.90 | No |
| A9 | 25次完全充电 25 cycles fully charged | 31.477 | 4.059 | 31.474 | 0.010 | 4.057 | 99.95 | No |
| A10 | 25次完全充电 25 cycles fully charged | 31.380 | 4.059 | 31.375 | 0.016 | 4.056 | 99.93 | 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 | 60.1 | No |
| A2 | 首次完全充电 First cycle fully charged | 59.9 | No |
| A3 | 首次完全充电 First cycle fully charged | 58.6 | No |
| A4 | 首次完全充电 First cycle fully charged | 59.5 | No |
| A5 | 首次完全充电 First cycle fully charged | 59.6 | No |
| A6 | 25 次完全充电 25 cycles fully charged | 60.3 | No |
| A7 | 25 次完全充电 25 cycles fully charged | 59.7 | No |
| A8 | 25 次完全充电 25 cycles fully charged | 58.3 | No |
| A9 | 25 次完全充电 25 cycles fully charged | 59.0 | No |
| A10 | 25 次完全充电 25 cycles fully charged | 58.9 | No |
| 以下空白 Blank below | | | |

T.6: 挤压

T.6: Crush

| 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 | 28.4 | No |
| B2 | 首次 50%容量 First cycle charged 50% rated capacity | 29.2 | No |
| B3 | 首次 50%容量 First cycle charged 50% rated capacity | 28.8 | No |
| B4 | 首次 50%容量 First cycle charged 50% rated capacity | 28.7 | No |
| B5 | 首次 50%容量 First cycle charged 50% rated capacity | 28.6 | No |
| B6 | 25 次 50%容量 25 cycles charged 50% rated capacity | 29.3 | No |
| B7 | 25 次 50%容量 25 cycles charged 50% rated capacity | 29.1 | No |
| B8 | 25 次 50%容量 25 cycles charged 50% rated capacity | 28.9 | No |
| B9 | 25 次 50%容量 25 cycles charged 50% rated capacity | 29.2 | No |
| B10 | 25 次 50%容量 25 cycles charged 50% rated capacity | 29.5 | No |
| 以下空白 Blank below | | | |

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 | 25 次完全充电 25 cycles fully charged | No |
| C6 | 25 次完全充电 25 cycles fully charged | No |
| C7 | 25 次完全充电 25 cycles fully charged | No |
| C8 | 25 次完全充电 25 cycles fully charged | No |
| 以下空白 Blank below | | |

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 | 25次完全放电 25 cycles fully discharged | No |
| D12 | 25次完全放电 25 cycles fully discharged | No |
| D13 | 25次完全放电 25 cycles fully discharged | No |
| D14 | 25次完全放电 25 cycles fully discharged | No |
| D15 | 25次完全放电 25 cycles fully discharged | No |
| D16 | 25次完全放电 25 cycles fully discharged | No |
| D17 | 25次完全放电 25 cycles fully discharged | No |
| D18 | 25次完全放电 25 cycles fully discharged | No |
| D19 | 25次完全放电 25 cycles fully discharged | No |
| D20 | 25次完全放电 25 cycles fully discharged | No |
| 以下空白 Blank below | | |

UN38.3 测试报告

UN38.3 Test Report

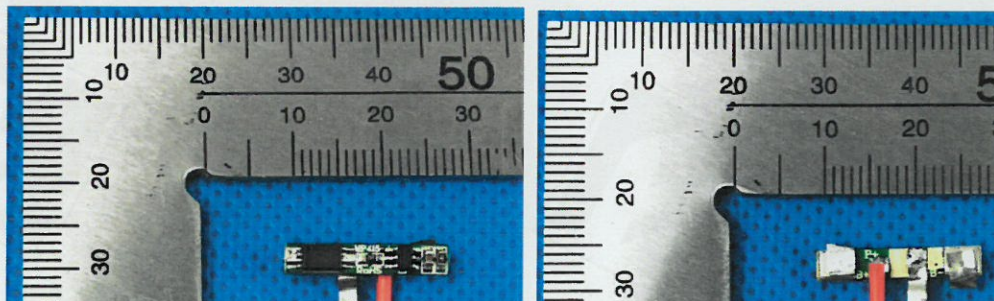
电芯照片/Cell pictures



电池照片/Battery pictures



保护装置/Protective devices



* End of the report *