Report No.: KS2410S4515B01

# UN38.3 Test Report

| | |
|---|---|
| **Samples Name** | **Lithium Battery Energy Storage** |
| 样品名称 | 储能锂电池 |
| **Model** | **SR-SE10B** |
| 型号 | |
| **Applicant** | **SRNE Solar Co., Ltd** |
| 委托单位 | 深圳硕日新能科技股份有限公司 |

广东科正技术服务有限公司
KSIGN(Guangdong) Testing Co., Ltd.


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## General Information
## 基本资料

| | | | |
|---|---|---|---|
| **Sample Name**<br>**样品名称** | Lithium Battery Energy Storage<br>储能锂电池 | **Model Name**<br>**型号** | SR-SE10B |
| **Rated**<br>**额定** | 51.2V, 205Ah | **Watt-hour**<br>**瓦时** | 10.49kWh |
| **Dimension**<br>**尺寸(L*W*H)** | 690.0*436.0*256.0 (mm) | **Weight**<br>**重量** | Appr.: 88.0kg |
| **Sample Status**<br>**样品状态** | Good<br>良好 | **Sample Information**<br>**样品信息** | Battery（16S1P）<br>电池（16 串 1 并） |
| **Applicant**<br>**委托单位** | SRNE Solar Co., Ltd<br>深圳硕日新能科技股份有限公司 | | |
| **Applicant Address**<br>**委托单位地址** | 4-5F, Building13A, Taihua Wutong Industrial Park, Gushu Development Zone, Hangcheng Street, Baoan, Shenzhen, China PR<br>深圳市宝安区航城街道三围社区泰华梧桐工业园大雪（13A）栋 4 层 5 层 | | |
| **Factory**<br>**生产工厂** | SRNE SOLAR CO., LTD Dongguan Branch<br>深圳硕日新能科技股份有限公司东莞分公司 | | |
| **Factory Address**<br>**生产工厂地址** | Room 301, Building 5th, Fuxing Rd No.36, Chang'an Town, Dongguan City, Guangdong Province, China PR<br>广东省东莞市长安镇复兴路 36 号 5 号楼 301 室 | | |
| **Factory Telephone**<br>**生产工厂电话** | +86-18575550440 | **Factory Email**<br>**生产工厂邮箱** | like@szshuori.com |
| **Factory Web**<br>**生产工厂网址** | / | | |
| **Test Method & Criterion**<br>**检验方法及判定标准** | UN "Manual of Tests and Criteria" ST/SG/AC.10/11/Rev.8/Subsection 38.3<br>联合国《试验和标准手册》（第八版）38.3 节 | | |
| **Testing Laboratory**<br>**检测单位** | KSIGN(Guangdong) Testing Co., Ltd.<br>广东科正技术服务有限公司<br>West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China<br>广东省深圳市宝安区沙井街道沙头社区民主九九工业区福源厂新厂房A区C栋一层西侧，518104 | | |
| **Sample Receiving Date**<br>**收样接收日期** | 2024 年 10 月 24 日 | **Test Date**<br>**测试日期** | 2024 年 10 月 24 日 至 2024 年 11 月 11 日 |
| **Conclusion**<br>**测试结论** | The samples has passed the test items of UN "Manual of Tests and Criteria" ST/SG/AC.10/11/Rev.8/Subsection 38.3.<br>受检样品通过联合国《试验和标准手册》（第八版）38.3 节各项检测，检测结果合格。<br>**Seal/签章：**<br>**Date of issue/签发日期：** 2024 年 11 月 13 日 | | |

**Tested By:** 主检 Test Engineer 黄木明
**Checker:** 审核 Project Engineer
**Approver:** 批准 Technical Director 林晓东

| Test Summary Lists<br>测试摘要列表 | | | |
|---|---|---|---|
| Test No.<br>测试编号 | Test Item<br>测试项目 | Test Methods<br>测试方法 | Conclusion<br>本项结论 |
| T1 | Altitude simulation / 高度模拟 | See Appendix 1<br>见附表1 | Passed<br>合格 |
| T2 | Thermal test / 温度试验 | See Appendix 2<br>见附表2 | Passed<br>合格 |
| T3 | Vibration / 振动测试 | See Appendix 3<br>见附表3 | Passed<br>合格 |
| T4 | Shock / 冲击测试 | See Appendix 4<br>见附表4 | Passed<br>合格 |
| T5 | External short circuit / 外部短路 | See Appendix 5<br>见附表5 | Passed<br>合格 |
| T6 | Impact / 撞击 | N/A<br>不适用 | N/A<br>不适用 |
| | Crush / 挤压 | See Appendix 6<br>见附表6 | Passed<br>合格 |
| T7 | Overcharge / 过度充电 | See Appendix 7<br>见附表7 | Passed<br>合格 |
| T8 | Forced discharge / 强制放电测试 | See Appendix 8<br>见附表8 | Passed<br>合格 |
| Remark<br>备注 | 1) Impact test applicable to cylindrical cells not less than 18.0mm in diameter.<br>撞击试验适用于直径不小于 18.0mm 的圆柱形电芯。<br>2) Crush test applicable to prismatic, pouch, coin/button cells and cylindrical cells less than 18.0mm in diameter.<br>挤压试验适用于棱柱形、袋状、硬币/纽扣电芯和直径不超过 18.0mm 的圆柱形电芯。 | | |

| Test Item<br>测试项目 | Sample No.<br>样品编号 | Sample State<br>样品状态 |
|---|---|---|
| T1~T5 | B01~B02 | At first cycle, in fully charged states<br>第1个充放电周期，完全充电状态 |
| | B03~B04 | After 25 cycles ending in fully charged states<br>第25个充放电周期，完全充电状态 |
| T6 | C01~C05 | At first cycle at 50% of the design rated capacity<br>第1个充放电周期 50%设计额定容量状态 |
| | C06~C10 | After 25 cycle at 50% of the design rated capacity<br>第25个充放电周期 50%设计额定容量状态 |
| T7 | B05~B06 | At first cycle, in fully charged states<br>第1个充放电周期，完全充电状态 |
| | B07~B08 | After 25 cycles ending in fully charged states<br>第25个充放电周期，完全充电状态 |
| T8 | C11~C20 | At first cycle in fully discharged states<br>第1个充放电周期，完全放电状态 |
| | C21~C30 | After 25 cycles ending in fully discharged states<br>第25个充放电周期，完全放电状态 |
| The above samples have been charged and discharged cycles by the factory as required before the test.<br>备注：以上样品在测试前已由工厂按要求进行充放电循环处理。 | | |

## Appendix 1
## 附表 1

| | |
|---|---|
| Test Items<br>测试项目 | Altitude simulation<br>高度模拟 |
| 1.1 | Test procedure<br>测试步骤 |
| | Test cells and batteries shall be stored at a pressure of 11.6kPa or less for at least six hour at ambient temperature (20±5℃).<br>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.<br>试验电芯和电池在环境温度(20±5℃)下，储存在小于等于11.6kPa的压力下至少六小时。<br>试验电芯或电池应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧，并且每个试验电芯或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芯或电池除外）。 |
| 1.2 | Result<br>测试结果 |

| Sample No.<br>样品编号 | Before 测试前 | | After 测试后 | | Mass loss<br>质量损失<br>(%) | Residual OCV<br>剩余电压<br>(%) | Test result<br>测试结果 |
|---|---|---|---|---|---|---|---|
| | Mass<br>样品质量<br>(kg) | Voltage<br>开路电压<br>(V) | Mass<br>样品质量<br>(kg) | Voltage<br>开路电压<br>(V) | | | |
| B01 | 87.96 | 53.25 | 87.96 | 53.22 | 0.00 | 99.94 | O |
| B02 | 87.91 | 53.24 | 87.91 | 53.21 | 0.00 | 99.94 | O |
| B03 | 88.00 | 53.23 | 88.00 | 53.23 | 0.00 | 100.00 | O |
| B04 | 87.00 | 53.24 | 87.00 | 53.22 | 0.00 | 99.96 | O |

Note: **L**- Leakage, **V**- Venting, **D**- Disassembly, **R**- Rupture, **F**- Fire,
**O**- No leakage, no venting, no disassembly, no rupture, no fire, no mass loss, change ratio is not less than 90 %.
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、无质量损失、电压比不小于 90 %。

## Appendix 2
## 附表 2

| | |
|---|---|
| Test Items<br>测试项目 | Thermal test<br>温度试验 |
| 2.1 | Test procedure<br>测试步骤 |
| | Test cells and batteries are to be stored for at least six hours at a test temperature equal to 72±2℃, followed by storage for at least six hours at a test temperature equal to -40±2℃. The maximum time interval between test temperature extremes in 30 minutes. This procedure is to be repeated until 10 total cycles are complete, after which all test cells and batteries are to be stored for 24 hours at ambient temperature (20±5℃). For large cells and batteries, the duration of exposure to the test temperature extremes should be at least 12 hours.<br>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.<br>将电芯和电池在温度为72±2℃的条件下贮存不少于6个小时，然后，在温度-40±2℃条件下贮存不少于6个小时，两个温度间的间隔最长为30min，重复操作上述步骤直到10次，然后，将其在环境温度为20±5℃的条件下放置24个小时。对于大型电池和电池组，暴露于极端试验温度的时间至少应为12小时。<br>试验电芯或电池应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧，并且每个试验电芯或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或电池除外）。 |
| 2.2 | Result<br>测试结果 |

| Sample No.<br>样品编号 | Before 测试前 | | After 测试后 | | Mass loss<br>质量损失<br>(%) | Residual OCV<br>剩余电压<br>(%) | Test result<br>测试结果 |
|---|---|---|---|---|---|---|---|
| | Mass<br>样品质量<br>(kg) | Voltage<br>开路电压<br>(V) | Mass<br>样品质量<br>(kg) | Voltage<br>开路电压<br>(V) | | | |
| B01 | 87.96 | 53.22 | 87.96 | 52.94 | 0.00 | 99.47 | O |
| B02 | 87.91 | 53.21 | 87.91 | 52.92 | 0.00 | 99.45 | O |
| B03 | 88.00 | 53.23 | 88.00 | 52.95 | 0.00 | 99.47 | O |
| B04 | 87.00 | 53.22 | 87.00 | 52.91 | 0.00 | 99.42 | O |

Note: **L**- Leakage, **V**- Venting, **D**- Disassembly, **R**- Rupture, **F**- Fire,
**O**- No leakage, no venting, no disassembly, no rupture, no fire, no mass loss, change ratio is not less than 90 %.
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、无质量损失、电压比不小于 90 %。

| Appendix 3<br>附表 3 | |
|---|---|
| Test Items<br>测试项目 | Vibration<br>振动 |
| 3.1 | Test procedure<br>测试步骤 |
| | 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 wave form with a logarithmic sweep between 7Hz and 200Hz and back to 7Hz traversed in 15minutes, this cycle shall be repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting position of the cell. One of the directions of vibration must be perpendicular to the terminal face.<br>The logarithmic frequency sweep shall differ for cells and batteries with a gross mass of not more than 12kg (cells and small batteries), and for batteries with a gross mass of more than 12kg (large batteries).<br>For cells and small batteries: from 7Hz a peak acceleration of 1gn is maintained until 18Hz is reached. The amplitude is then maintained at 0.8mm (1.6mm total excursion) and the frequency increased until a peak acceleration of 8gn occurs (approximately 50Hz). A peak acceleration of 8gn is then maintained until the frequency is increased to 200Hz.<br>For large batteries: from 7Hz to a peak acceleration of 1gn is maintained until 18Hz is reached. The amplitude is then maintained at 0.8mm (1.6mm total excursion) and the frequency increased until a peak acceleration of 2gn occurs (approximately 25Hz). A peak acceleration of 2gn is then maintained until the frequency is increased to 200Hz.<br>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.<br>将电芯和电池牢固地安装在振动台的台面上，然后开始振动。振动以正弦波形式，以 7Hz 增加至 200Hz，然后再减少回到 7Hz 为一个循环，一个循环持续 15 分钟的对数扫频。每个电芯和电池从三个互相垂直的方向上循环 12 次，每个方向共计 3 个小时。其中一个振动方向必须是垂直样品的极性平面。<br>对于质量不大于 12kg 的样品(电芯和小电池)和质量超过 12kg 的电池(大电池)，对数扫频不同。<br>对于电芯和小电池，对数扫频为：从 7Hz 开始保持 1gn 的最大加速度直到频率为 18Hz，然后将振幅保持在 0.8mm (总偏移 1.6mm) 并增加频率直到最大加速度达到 8gn (频率约为 50Hz)，将最大加速度保持在 8gn 直到频率增加到 200Hz。<br>对于大电池，对数扫频为：从 7Hz 开始保持 1gn 的最大加速度直到频率为 18Hz，然后将振幅保持在 0.8mm (总偏移 1.6mm)并增加频率直到最大加速度达到 2gn (频率约为 25Hz)，将最大加速度保持在 2gn 直到频率增加到 200Hz。<br>试验电芯或电池应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧，并且每个试验电芯或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芯或电池除外）。 |
| 3.2 | Result<br>测试结果 |

| Sample No.<br>样品编号 | Before 测试前 | | After 测试后 | | Mass loss<br>质量损失<br>(%) | Residual OCV<br>剩余电压<br>(%) | Test result<br>测试结果 |
|---|---|---|---|---|---|---|---|
| | Mass<br>样品质量<br>(kg) | Voltage<br>开路电压<br>(V) | Mass<br>样品质量<br>(kg) | Voltage<br>开路电压<br>(V) | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| B01 | 87.96 | 52.94 | 87.96 | 52.92 | 0.00 | 99.96 | O |
| B02 | 87.91 | 52.92 | 87.91 | 52.89 | 0.00 | 99.94 | O |
| B03 | 88.00 | 52.95 | 88.00 | 52.91 | 0.00 | 99.92 | O |
| B04 | 87.00 | 52.91 | 87.00 | 52.89 | 0.00 | 99.96 | O |

Note: **L**- Leakage, **V**- Venting, **D**- Disassembly, **R**- Rupture, **F**- Fire,
**O**- No leakage, no venting, no disassembly, no rupture, no fire, no mass loss, change ratio is not less than 90 %.
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、无质量损失、电压比不小于 90 %。

## Appendix 4
## 附表 4

| Test Items<br>测试项目 | Shock<br>冲击 |
|---|---|
| 4.1 | Test procedure<br>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 test battery. Each cell or battery shall be subjected to a halfsine shock of peak acceleration of 150gn and pulse duration of 6milliseconds. Alternatively, large cells may besubjected to a half-sine shock of peak acceleration of 50gn and pulse duration of 11 milliseconds. Each battery shall be subjected to a half-sine shock of peak acceleration depending on themass of the battery. The pulse duration shall be 6 milliseconds for small batteries and 11 milliseconds for large batteries. The formulas below are provided to calculate the appropriate minimum peak accelerations.
将试验电芯和电池用坚硬的支架固定在试验装置上，支架支撑着每个试验电池的所有安装面;电芯经受峰值加速度 150gn 和脉冲持续时间 6ms 的半正弦波冲击;大电芯需经受峰值加速度 50gn 和脉冲持续时间 11ms 的半正弦波冲击;每个电池需经受半正弦波冲击的峰值加速度取决于电池的质量。小型电池的脉冲持续时间为 6ms，大型电池为 11ms。以下提供的公式用来计算适合的最小峰值加速度。

| Battery | Minimum peak acceleration | Pulse duration |
|---|---|---|
| Small batteries | 150 gn or result of formula<br>Acceleration(gn)= $\sqrt{\frac{100850}{mass^*}}$<br>whichever is smaller | 6 ms |
| Large batteries | 50 gn or result of formula<br>Acceleration(gn)= $\sqrt{\frac{30000}{mass^*}}$<br>whichever is smaller | 11 ms |

Note: "*" Mass is expressed in kilograms

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.

| | |
|---|---|
| | 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 express in kilograms)<br>每个电芯或电池须在三个互相垂直的电芯安装方位的正方向经受三次冲击，接着反方向经受三次冲击，总共经受 18 次冲击。<br>各试验电芯或电池应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧，并且每个试验电芯或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芯或电池除外）。 |
| 4.2 | Result<br>测试结果 |

| Sample No.<br>样品编号 | Before 测试前 | | After 测试后 | | Mass loss<br>质量损失<br>(%) | Residual OCV<br>剩余电压<br>(%) | Test result<br>测试结果 |
|---|---|---|---|---|---|---|---|
| | Mass<br>样品质量<br>(kg) | Voltage<br>开路电压<br>(V) | Mass<br>样品质量<br>(kg) | Voltage<br>开路电压<br>(V) | | | |
| B01 | 87.96 | 52.92 | 87.96 | 52.88 | 0.00 | 99.92 | O |
| B02 | 87.91 | 52.89 | 87.91 | 52.89 | 0.00 | 100.00 | O |
| B03 | 88.00 | 52.91 | 88.00 | 52.89 | 0.00 | 99.96 | O |
| B04 | 87.00 | 52.89 | 87.00 | 52.87 | 0.00 | 99.96 | O |

Note: **L**- Leakage, **V**- Venting, **D**- Disassembly, **R**- Rupture, **F**- Fire,
**O**- No leakage, no venting, no disassembly, no rupture, no fire, no mass loss, change ratio is not less than 90 %.
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、无质量损失、电压比不小于 90 %。

| Appendix 5<br>附表 5 | | |
|---|---|---|
| Test Items<br>测试项目 | External short circuit<br>外部短路 | |
| 5.1 | Test procedure<br>测试步骤 | |
| | The cell or battery to be tested shall be heated for a period of time necessary to reacha homogeneous stabilized temperature of 57 ± 4 °C, measured on the external case. This period of time depends on the size and design of the cell or battery and should be assessed and documented. If this assessment is not feasible, the exposure time shall be at least 6 hours for small cells and small batteries, and 12 hours for large cells and large batteries. Then the cell or battery at 57 ± 4 °C shall be subjected to one short circuit condition with a total external resistance of less than 0.1 ohm.<br>This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to 57 ± 4 °C, or in the case of the large batteries, has decreased by half of the maximum temperature increase observed during the test and remains below that value.<br>The short circuit and cooling down phases shall be conducted at least at ambient temperature. 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.<br>用于测试的电芯或电池外壳温度达到恒温57 ± 4 °C后，再进行外部短路。短路的时间取决于电芯或电池的尺寸和设计，并需被评估和记录。如果这个评估无法进行，那么小电芯和小电池短路时间至少6小时，大电芯和大电池短路时间至少12小时。然后电芯或电池在57±4℃环境下经受一个阻值小于0.1Ω的外部电路短路。<br>电芯或电池温度到57±4℃之后，短路时间需持续1小时，大型电池短路温度下降到最大温升的一半并保持。短路和降温阶段至少应在环境温度下进行。电芯或电池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。 | |
| 5.2 | Result<br>测试结果 | |
| Sample No.<br>样品编号 | Max. External Temperature<br>样品表面最高温度(℃) | Test result<br>测试结果 |
| B01 | 58.4 | O |
| B02 | 58.2 | O |
| B03 | 58.6 | O |
| B04 | 58.1 | O |

Note: **D**- Disassembly, **R**- Rupture, **F**- Fire, **O**- No disassembly, no rupture, no fire, test sample external temperature does not exceed 170 °C.
注： **D**- 解体；**R**- 破裂；**F**- 起火；**O**- 无解体、无破裂、无起火，测试样品表面温度不超过 170 °C。

| Appendix 6<br>附表 6 | |
|---|---|
| Test Items<br>测试项目 | ☐Impact撞击<br>☒Crush挤压 |
| 6.1 | Test procedure<br>测试步骤 |
| | 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.<br>(a) The applied force reaches 13kN ± 0.78kN;<br>(b) The voltage of the cell drops by at least 100mV; or<br>(c) The cell is deformed by 50% or more of its original thickness.<br>Once the maximum pressure has been obtained, the voltage drops by 100mV or more, or the cell is deformed by at least 50% of its original thickness, the pressure shall be released.<br>Cells and component cells meet<br>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.<br>将试验电芯或元件电芯放在两个平面之间挤压。挤压在第一个接触点以约 1.5cm/s 的速度慢慢进行，直到下面三个选项之一达到为止：<br>(a) 挤压力达到 13kN±0.78kN；<br>(b) 电芯电压降至少达到 100mV；<br>(c) 电池厚度和最初比较变形至少 50%。<br>一旦达到最大压力，电压降超过 100mV 或者电芯变形超过 50%，压力应该解除。<br>试验电芯或电池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。 |
| 6.2 | Result<br>测试结果 |

| Sample No.<br>样品编号 | Max. External Temperature<br>样品表面最高温度(℃) | Test result<br>测试结果 |
|---|---|---|
| C01 | 24.5 | O |
| C02 | 24.7 | O |
| C03 | 24.4 | O |
| C04 | 24.3 | O |
| C05 | 24.2 | O |
| C06 | 24.5 | O |
| C07 | 24.2 | O |
| C08 | 24.1 | O |
| C09 | 24.6 | O |
| C10 | 24.3 | O |

Note: **D**- Disassembly, **F**- Fire, **O**- No disassembly, no fire, test sample external temperature does not exceed 170 °C.
注：**D**- 解体；**F**- 起火； **O**- 无解体、无起火，测试样品表面温度不超过 170 °C。

| Appendix 7<br>附表 7 | | |
|---|---|---|
| Test Items<br>测试项目 | Overcharge<br>过度充电 | |
| 7.1 | Test procedure<br>测试步骤 | |
| | The charge current shall be twice the manufacturer's recommended maximum continuous charge current. The duration of the test shall be 24 hours. The minimum voltage of the test shall be as follows:<br>充电电流必须是制造商建议的最大持续充电电流的两倍，测试时间为 24 小时。试验的最小电压如下： | |
| | 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 or 22V.<br>Rechargeable batteries meet this requirement if there is no disassembly and no fire within seven days of the test.<br>如果厂家推荐的充电电压不超过 18V，则测试电压是两倍的厂家推荐的最大充电电压或者 22V 之间的较小值。<br>试验样品在试验后 7 天内应无解体和无燃烧。 | N/A<br>不适用 |
| | When the manufacturer's recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times maximum charge voltage.<br>Rechargeable batteries meet this requirement if there is no disassembly and no fire within seven days of the test.<br>如果厂家推荐的充电电压超过 18V，本测试的最小充电电压应该为 1.2 倍的厂家推荐的最大充电电压。<br>试验样品在试验后 7 天内应无解体和无燃烧。 | The specified maximum charge voltage is 57.6V;<br>The specified maximum charge current is 200A;<br>The test voltage is 69.12V;<br>The test current is 400A.<br>厂家规定的最大充电电压为 57.6V;<br>厂家规定的最大充电电流为 200A;<br>测试电压为 69.12V;<br>测试电流为 400A。 |
| 7.2 | Result<br>测试结果 | |

| Sample No.<br>样品编号 | Voltage Before test(V)<br>测试前开路电压(V) | Test result<br>测试结果 |
|---|---|---|
| B05 | 53.24 | O |
| B06 | 53.25 | O |
| B07 | 53.25 | O |
| B08 | 53.23 | O |

Note: **D**- Disassembly, **F**- Fire, **O**- No disassembly, no fire.
注：**D**- 解体；**F**- 起火； **O**- 无解体、无起火。

## Appendix 8
## 附表 8

| Test Items<br>测试项目 | Forced discharge<br>强制放电 | | | | |
|---|---|---|---|---|---|
| 8.1 | Test procedure<br>测试步骤 | | | | |
| | 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 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.<br>每个电芯应在环境温度下与 12V 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强制放电。指定的放电电流通过串联在测试电芯上的合适大小和功率的负载来获得，每个电芯的强制放电时间(小时)为额定容量除以初始电流(安培)。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。 | | | | |
| 8.2 | Result<br>测试结果 | | | | |
| Sample No.<br>样品编号 | Voltage Before test<br>测试前开路电压(V) | Test result<br>测试结果 | Sample No.<br>样品编号 | Voltage Before test<br>测试前开路电压(V) | Test result<br>测试结果 |
| C11 | 2.688 | O | C21 | 2.679 | O |
| C12 | 2.685 | O | C22 | 2.674 | O |
| C13 | 2.689 | O | C23 | 2.676 | O |
| C14 | 2.688 | O | C24 | 2.680 | O |
| C15 | 2.684 | O | C25 | 2.674 | O |
| C16 | 2.686 | O | C26 | 2.676 | O |
| C17 | 2.683 | O | C27 | 2.675 | O |
| C18 | 2.682 | O | C28 | 2.673 | O |
| C19 | 2.681 | O | C29 | 2.672 | O |
| C20 | 2.682 | O | C30 | 2.669 | O |

Note: **D**- Disassembly, **F**- Fire, **O**- No disassembly, no fire.
注：**D**- 解体；**F**- 起火；**O**- 无解体、无起火

## Photos of samples
## 样品图片




Figure 1 Front view of battery



Figure 2 Back view of battery

## Photos of samples
## 样品图片



Figure 3 Front view of cell

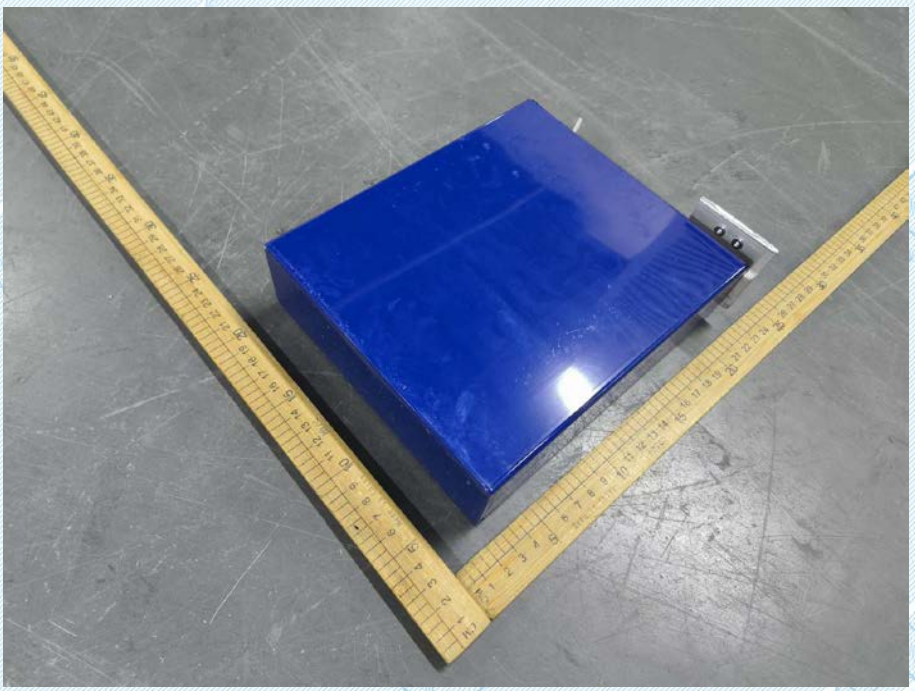


Figure 4 Back view of cell

## Photos of samples
## 样品图片

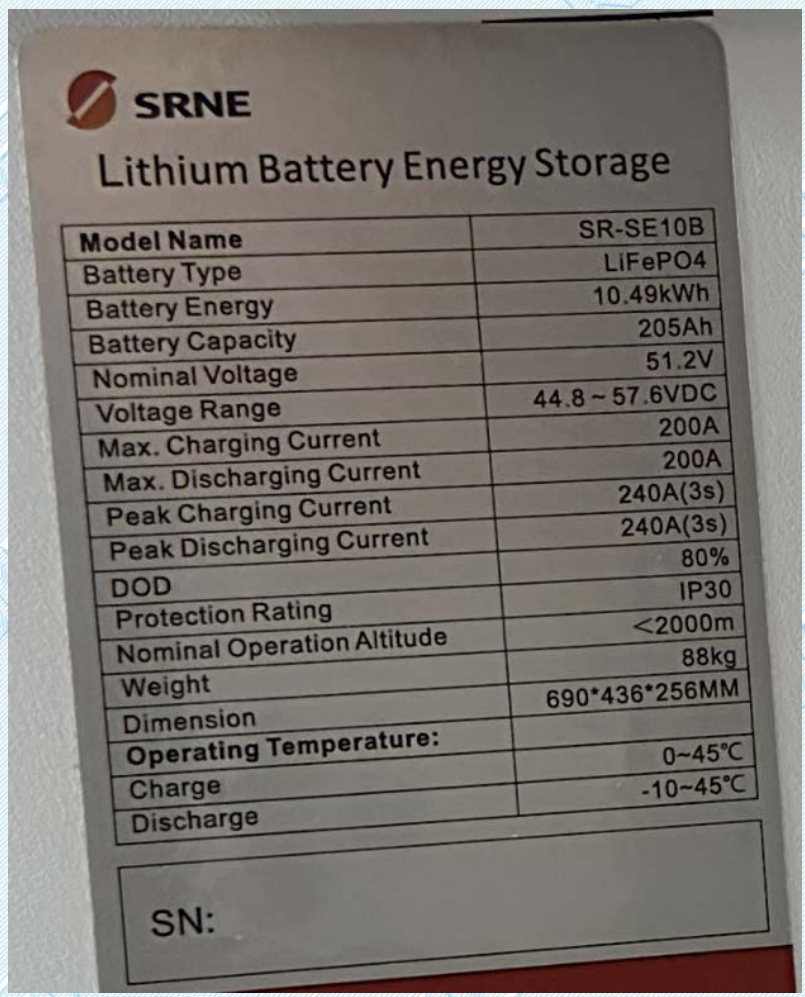



Figure 5 Label view

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