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No: 01052000000884-1(E)

Date: 2020-04-01

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# UN38.3 报告

## UN38.3 Test Report

样品名称: Battery-Box Premium Module

Sample Name: Battery-Box Premium Module

委托单位: 深圳市比亚迪电子有限公司

Applicant: Shenzhen BYD Electronics Co., Ltd.



广州海关技术中心



GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER

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## 检测证书

### TEST REPORT

|                                        |                                                                                                                                                                                                                                                             |                   |                       |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------|
| 样品名称<br>Sample Name                    | Battery-Box Premium Module                                                                                                                                                                                                                                  |                   |                       |
| 型号<br>Model                            | HVS                                                                                                                                                                                                                                                         |                   |                       |
| 委托单位<br>Applicant                      | 深圳市比亚迪电子有限公司<br>Shenzhen BYD Electronics Co., Ltd.                                                                                                                                                                                                          |                   |                       |
| 委托单位地址<br>Applicant Address            | 深圳市大鹏新区葵涌街道葵涌社区延安路1号比亚迪A-4#厂房301<br>Room 301 of BYD A-4 Building, No.1 Yan'an Road, Kuichong Street, Dapeng New District, Shenzhen                                                                                                                          |                   |                       |
| 生产单位<br>Manufacture                    | 深圳市比亚迪电子有限公司<br>Shenzhen BYD Electronics Co., Ltd.                                                                                                                                                                                                          |                   |                       |
| 生产单位地址<br>Manufacture Address          | 深圳市大鹏新区葵涌街道葵涌社区延安路1号比亚迪A-4#厂房301<br>Room 301 of BYD A-4 Building, No.1 Yan'an Road, Kuichong Street, Dapeng New District, Shenzhen                                                                                                                          |                   |                       |
| 样品外观与性状<br>Appearance & Odor           | 银灰色金属外壳<br>Silver gray metal shell                                                                                                                                                                                                                          |                   |                       |
| 测试方法和判定标准<br>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<br>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<br>Accepted date                  | 2020-03-04                                                                                                                                                                                                                                                  | 测试日期<br>Test date | 2020-03-05~2020-04-01 |
| 测试项目<br>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。<br>Altitude simulation, Thermal test, Vibration, Shock, External short circuit, Crush, Overcharge, Forced discharge.                                                                                                     |                   |                       |
| 结论<br>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。<br>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<br>Remark                           | 1.检测结果仅对样品有效；<br>The test results are only valid for the test samples submitted the applicant.<br>2.随附 UN38.3 试验概要（编号：01052000000884-2(E)）。<br>Attached with UN38.3 test summary (No.: 01052000000884-2(E)).                                                |                   |                       |

批准

Approver:

审核

Checker:

主检

Appraiser:

1. 本报告结果仅对测试样品负责。The results in this report are relevant only to the sample(s) tested.

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电池组信息：

The batteries information:

|                                      |                                                    |                                     |                                        |
|--------------------------------------|----------------------------------------------------|-------------------------------------|----------------------------------------|
| 电池类型<br>Battery type                 | 锂离子电池<br>Lithium ion batteries                     | 标称电压<br>Nominal Voltage             | 102.4V                                 |
| 额定容量<br>Rated Capacity               | 25Ah                                               | 总能量<br>Total Energy                 | 2.56KWh                                |
| 充电限制电压<br>Limited Charge Voltage     | 115.2V                                             | 标准充电电流<br>Standard Charge Current   | 5A                                     |
| 最大充电电流<br>Maximum Charge Current     | 25A                                                | 充电截止电流<br>Charge Cut-off Current    | 2.5A                                   |
| 标准放电电流<br>Standard discharge Current | 5A                                                 | 最大放电电流<br>Maximum Discharge Current | 50A                                    |
| 放电截止电压<br>Discharge Cut-off Voltage  | 80V                                                | 尺寸<br>Overall Dimensions<br>(W×D×H) | 584.46mm(W)×297.60mm(D)<br>×255.5mm(H) |
| 电芯数量<br>Cell Quantity                | 32 PCS                                             | 重量<br>Mass                          | 36.4kg                                 |
| 电芯容量<br>Cell Capacity                | 25Ah                                               | 电芯型号<br>Cell Model                  | C20U                                   |
| 电芯生产单位<br>Manufacturer of cell       | 深圳市比亚迪电子有限公司<br>Shenzhen BYD Electronics Co., Ltd. |                                     |                                        |

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| 序号<br>No.                              | 测试项目名称<br>Name of test         | 标准要求或标准条款号<br>Stand requirement or the clause number of standard                                            | 测试结果<br>Test result     | 本项结论<br>Test conclusion | 备注<br>Remark      |
|----------------------------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------|-------------------|
| 1                                      | 高空模拟<br>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<br>See Appendix 1 | 合格<br>Passed            | /                 |
| 2                                      | 温度试验<br>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<br>See Appendix 2 | 合格<br>Passed            | /                 |
| 3                                      | 振动<br>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<br>See Appendix 3 | 合格<br>Passed            | /                 |
| 4                                      | 冲击<br>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<br>See Appendix 4 | 合格<br>Passed            | /                 |
| 5                                      | 外部短路<br>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<br>See Appendix 5 | 合格<br>Passed            | /                 |
| 6                                      | 挤压<br>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<br>See Appendix 6 | 合格<br>Passed            | /                 |
| 7                                      | 过度充电<br>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<br>See Appendix 7 | 合格<br>Passed            | /                 |
| 8                                      | 强制放电<br>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<br>See Appendix 8 | 合格<br>Passed            | /                 |
| 测试环境<br>Test environment condition     |                                | 环境温度：20℃-25℃；环境湿度：45%-75%<br>Ambient temperature: 20℃-25℃, Ambient humidity: 45%-75%                        |                         |                         |                   |
| 分包测试情况<br>Subcontracted test condition |                                | 测试项目<br>Test items                                                                                          | /                       |                         |                   |
|                                        |                                | 分包实验室<br>Subcontracted Laboratory                                                                           | 名称<br>Name              | /                       | 邮编<br>Post code / |
|                                        |                                |                                                                                                             | 地址<br>Address           | /                       | 电话<br>Tel /       |

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| 序号<br>No.                                                                                                                                                                                 | 附表 1<br>Appendix 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            | 测试项目名称<br>Name of test      |                            | 高空模拟<br>Altitude simulation |                            |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|----------------------------|---------------------|
| 标准要求<br>Requirement<br>of Standard                                                                                                                                                        | 试验电池或电池组在压力等于或低于 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）。<br>Test cells and batteries shall be stored at a pressure of 11.6kPa or less for at least six hours at ambient temperature 20±5℃. 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<br>Sample<br>status                                                                                                                                                                  | b1#~b2#: 第一个循环完全充电的电池；<br>b1#~b2#: first cycle in fully charged states;<br>b3#~b4#: 第二十五个循环完全充电的电池。<br>b3#~b4#: after 25 cycles ending in fully charged states.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                             |                            |                             |                            |                     |
| 样品编号<br>Sample No.                                                                                                                                                                        | 测试前 Before                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                            | 测试后 After                   |                            | 质量损失<br>Mass loss<br>(%)    | 剩余电压<br>Residual<br>OCV(%) | 测试结果<br>Test result |
|                                                                                                                                                                                           | 电池质量<br>m <sub>1</sub> (kg)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 开路电压<br>v <sub>1</sub> (v) | 电池质量<br>m <sub>2</sub> (kg) | 开路电压<br>v <sub>2</sub> (v) |                             |                            |                     |
| b1#                                                                                                                                                                                       | 36.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 109.47                     | 36.42                       | 109.47                     | 0.00                        | 100.00                     | O                   |
| b2#                                                                                                                                                                                       | 36.44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 109.52                     | 36.44                       | 109.52                     | 0.00                        | 100.00                     | O                   |
| b3#                                                                                                                                                                                       | 36.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 109.44                     | 36.42                       | 109.44                     | 0.00                        | 100.00                     | O                   |
| b4#                                                                                                                                                                                       | 36.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 109.48                     | 36.42                       | 109.48                     | 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。<br>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<br>No.                                                                                                                                                                                 | 附表 2<br>Appendix 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 测试项目名称<br>Name of test     | 温度试验<br>Thermal test        |                            |                          |                            |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------|----------------------------|--------------------------|----------------------------|---------------------|
| 标准要求<br>Requirement<br>of Standard                                                                                                                                                        | 试验大型电池或电池组在试验温度等于 72±2℃下存放至少 12h，接着在试验温度等于-40±2℃下存放至少 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±5℃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）。<br>Test large cells and batteries are to be stored for at least 12 hours at a test temperature equal to 72±2℃, followed by storage for at least 12 hours at a test temperature equal to -40±2℃. 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±5℃). 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<br>Sample<br>status                                                                                                                                                                  | b1#~b2#: 第一个循环完全充电的电池；<br>b1#~b2#: first cycle in fully charged states;<br>b3#~b4#: 第二十五个循环完全充电的电池。<br>b3#~b4#: after 25 cycles ending in fully charged states.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            |                             |                            |                          |                            |                     |
| 样品编号<br>Sample No.                                                                                                                                                                        | 测试前 Before                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            | 测试后 After                   |                            | 质量损失<br>Mass loss<br>(%) | 剩余电压<br>Residual<br>OCV(%) | 测试结果<br>Test result |
|                                                                                                                                                                                           | 电池质量<br>m <sub>1</sub> (kg)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 开路电压<br>v <sub>1</sub> (v) | 电池质量<br>m <sub>2</sub> (kg) | 开路电压<br>v <sub>2</sub> (v) |                          |                            |                     |
| b1#                                                                                                                                                                                       | 36.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 109.47                     | 36.42                       | 107.26                     | 0.00                     | 97.98                      | O                   |
| b2#                                                                                                                                                                                       | 36.44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 109.52                     | 36.44                       | 107.65                     | 0.00                     | 98.29                      | O                   |
| b3#                                                                                                                                                                                       | 36.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 109.44                     | 36.42                       | 107.34                     | 0.00                     | 98.08                      | O                   |
| b4#                                                                                                                                                                                       | 36.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 109.48                     | 36.42                       | 107.28                     | 0.00                     | 97.99                      | 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。<br>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<br>No.                                                                                                                                                                                 | 附表 3<br>Appendix 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 测试项目名称<br>Name of test     |                             | 振动<br>Vibration            |                       |                         |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------|----------------------------|-----------------------|-------------------------|---------------------|
| 标准要求<br>Requirement of Standard                                                                                                                                                           | 将大型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，从 7Hz 开始,保持 1g <sub>n</sub> 的最大加速度,直到 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 2g <sub>n</sub> (频率约为 25Hz)。将最大加速度保持在 2g <sub>n</sub> 直到频率增加到 200Hz。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）。<br>The large 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 from 7Hz to a peak acceleration of 1g <sub>n</sub> 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 2g <sub>n</sub> occurs (approximately 25Hz). A peak acceleration of 2g <sub>n</sub> is then maintained until the frequency is increased to 200Hz. 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<br>Sample status                                                                                                                                                                     | b1#~b2#: 第一个循环完全充电的电池；<br>b1#~b2#: first cycle in fully charged states;<br>b3#~b4#: 第二十五个循环完全充电的电池。<br>b3#~b4#: after 25 cycles ending in fully charged states.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            |                             |                            |                       |                         |                     |
| 样品编号<br>Sample No.                                                                                                                                                                        | 测试前 Before                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            | 测试后 After                   |                            | 质量损失<br>Mass loss (%) | 剩余电压<br>Residual OCV(%) | 测试结果<br>Test result |
|                                                                                                                                                                                           | 电池质量<br>m <sub>1</sub> (kg)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 开路电压<br>v <sub>1</sub> (v) | 电池质量<br>m <sub>2</sub> (kg) | 开路电压<br>v <sub>2</sub> (v) |                       |                         |                     |
| b1#                                                                                                                                                                                       | 36.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 107.26                     | 36.42                       | 107.14                     | 0.00                  | 99.89                   | O                   |
| b2#                                                                                                                                                                                       | 36.44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 107.65                     | 36.44                       | 107.62                     | 0.00                  | 99.97                   | O                   |
| b3#                                                                                                                                                                                       | 36.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 107.34                     | 36.42                       | 107.22                     | 0.00                  | 99.89                   | O                   |
| b4#                                                                                                                                                                                       | 36.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 107.28                     | 36.42                       | 107.17                     | 0.00                  | 99.90                   | 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。<br>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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Add: Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Tianhe District, Guangzhou, China

Website: www.iqtc.cn Postcode: 510623

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| 序号<br>No.                                                                                                                                                                                 | 附表 4<br>Appendix 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 测试项目名称<br>Name of test     | 冲击<br>Shock                 |                            |                          |                            |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------|----------------------------|--------------------------|----------------------------|---------------------|
| 标准要求<br>Requirement<br>of Standard                                                                                                                                                        | 将电池或电池组用坚硬支架紧固在试验装置上，对于大型电池组，以加速度为 50g <sub>n</sub> 或 g <sub>n</sub> =√(30000 / mass) 中较小者的正弦波冲击，脉冲持续时间 11ms，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）。<br>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 Large batteries shall be subjected to a half-sine shock of peak acceleration of 50g <sub>n</sub> or acceleration (g <sub>n</sub> ) = √(30000 / mass) and pulse duration of 11 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 express in kilograms) |                            |                             |                            |                          |                            |                     |
| 样品状态<br>Sample<br>status                                                                                                                                                                  | b1#~b2#: 第一个循环完全充电的电池；<br>b1#~b2#: first cycle in fully charged states;<br>b3#~b4#: 第二十五个循环完全充电的电池。<br>b3#~b4#: after 25 cycles ending in fully charged states.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            |                             |                            |                          |                            |                     |
| 样品编号<br>Sample No.                                                                                                                                                                        | 测试前 Before                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            | 测试后 After                   |                            | 质量损失<br>Mass loss<br>(%) | 剩余电压<br>Residual<br>OCV(%) | 测试结果<br>Test result |
|                                                                                                                                                                                           | 电池质量<br>m <sub>1</sub> (kg)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 开路电压<br>v <sub>1</sub> (v) | 电池质量<br>m <sub>2</sub> (kg) | 开路电压<br>v <sub>2</sub> (v) |                          |                            |                     |
| b1#                                                                                                                                                                                       | 36.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 107.14                     | 36.42                       | 107.14                     | 0.00                     | 100.00                     | O                   |
| b2#                                                                                                                                                                                       | 36.44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 107.62                     | 36.44                       | 107.62                     | 0.00                     | 100.00                     | O                   |
| b3#                                                                                                                                                                                       | 36.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 107.22                     | 36.42                       | 107.22                     | 0.00                     | 100.00                     | O                   |
| b4#                                                                                                                                                                                       | 36.42                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 107.17                     | 36.42                       | 107.17                     | 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。<br>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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Add: Tower B, No.66 Huacheng Avenue, Zhujiang Xincheng, Tianhe District, Guangzhou, China

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| 序号<br>No.                                                                                                                      | 附表 5<br>Appendix 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 测试项目名称<br>Name of test | 外部短路<br>External short circuit |
|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------|
| 标准要求<br>Requirement of Standard                                                                                                | <p>待试验电池或电池组的外壳温度稳定在 <math>57\pm4^{\circ}\text{C}</math> 后，在 <math>57\pm4^{\circ}\text{C}</math> 下使电池或电池组经受总外电阻小于 <math>0.1\Omega</math> 的短路条件，当电池或电池组外壳温度回到 <math>57\pm4^{\circ}\text{C}</math> 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 <math>170^{\circ}\text{C}</math>，并且试验后 6h 内应无解体、无破裂和无燃烧。</p> <p>The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches <math>57\pm4^{\circ}\text{C}</math> and then the cell or battery shall be subjected to a short circuit condition with a total external resistance of less than <math>0.1\text{ ohm}</math> at <math>57\pm4^{\circ}\text{C}</math>. This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to <math>57\pm4^{\circ}\text{C}</math>. 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 <math>170^{\circ}\text{C}</math> and there is no disassembly, no rupture and no fire within six hours of this test.</p> |                        |                                |
| 样品状态<br>Sample status                                                                                                          | <p>b1#~b2#: 第一个循环完全充电的电池；<br/>b1#~b2#: first cycle in fully charged states;<br/>b3#~b4#: 第二十五个循环完全充电的电池。<br/>b3#~b4#: after 25 cycles ending in fully charged states.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                        |                                |
| 样品编号<br>Sample No.                                                                                                             | 样品表面最高温度<br>Max External Temperature( $^{\circ}\text{C}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 测试结果<br>Test result    | 备注 Remark                      |
| b1#                                                                                                                            | 56.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | O                      | /                              |
| b2#                                                                                                                            | 56.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | O                      | /                              |
| b3#                                                                                                                            | 56.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | O                      | /                              |
| b4#                                                                                                                            | 56.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | O                      | /                              |
| <p>注：D-解体；R-破裂；F-起火；O-无解体、无破裂、无起火。<br/>Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture &amp; No Fire.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                        |                                |

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| 序号<br>No.                                                                                                              | 附表 6<br>Appendix 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 测试项目名称<br>Name of test |              | 挤压<br>Crush        |                                         |                     |              |
|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------|--------------------|-----------------------------------------|---------------------|--------------|
| 标准要求<br>Requirement<br>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）：<br/>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：</p> <p>(a)施加的力量达到 13kN±0.78kN；<br/>(b)电池的电压下降至少 100 毫伏；或<br/>(c)电池变形量达原始厚度的 50%或以上。</p> <p>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。</p> <p>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。</p> <p>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.</p> <p>(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.</p> <p>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.</p> <p>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<br>Sample status                                                                                                  | <p>C1#~C5#： 第一个循环 50%的额定容量的电芯。<br/>C1#~C5#： first cycle at 50% of the design rated capacity of cell.<br/>C6#~C10#： 第二十五个循环 50%的额定容量的电芯。<br/>C6#~C10#： after 25 cycles at 50% of the design rated capacity of cell.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                        |              |                    |                                         |                     |              |
| 样品编号<br>Sample No.                                                                                                     | 样品表面最高温度<br>Max External Temperature(℃)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 测试结果<br>Test result    | 备注<br>Remark | 样品编号<br>Sample No. | 样品表面最高温度<br>Max External Temperature(℃) | 测试结果<br>Test result | 备注<br>Remark |
| C1#                                                                                                                    | 24.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | O                      | /            | C6#                | 24.3                                    | O                   | /            |
| C2#                                                                                                                    | 24.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | O                      | /            | C7#                | 24.7                                    | O                   | /            |
| C3#                                                                                                                    | 25.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | O                      | /            | C8#                | 24.2                                    | O                   | /            |
| C4#                                                                                                                    | 24.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | O                      | /            | C9#                | 25.1                                    | O                   | /            |
| C5#                                                                                                                    | 24.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | O                      | /            | C10#               | 25.2                                    | O                   | /            |
| 注： D-解体； R-破裂； F-起火； O-无解体、无破裂、无起火。<br>Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture & No Fire. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |              |                    |                                         |                     |              |



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| 序号<br>No.                                                                                                                             | 附表 7<br>Appendix 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 测试项目名称<br>Name of test | 过度充电<br>Overcharge |
|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------|
| 标准要求<br>Requirement<br>of Standard                                                                                                    | <p>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：</p> <p>（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。</p> <p>（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。</p> <p>The charge current shall be twice the manufacturer's recommended maximum continuous charge current. The minimum voltage of the test shall be as follows:</p> <p>(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.</p> <p>(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.</p> <p>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.</p> |                        |                    |
| 样品状态<br>Sample<br>status                                                                                                              | <p>b1#~b2#： 第一个循环完全充电的电池；</p> <p>b1#~b2#： first cycle in fully charged states;</p> <p>b3#~b4#： 第二十五个循环完全充电的电池。</p> <p>b3#~b4#： after 25 cycles ending in fully charged states.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                        |                    |
| 样品编号<br>Sample No.                                                                                                                    | 测试结果<br>Test result                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 备注<br>Remark           |                    |
| b1#                                                                                                                                   | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | /                      |                    |
| b2#                                                                                                                                   | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | /                      |                    |
| b3#                                                                                                                                   | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | /                      |                    |
| b4#                                                                                                                                   | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | /                      |                    |
| <p>注： D-解体； R-破裂； F-起火； O-无解体、无破裂、无起火。</p> <p>Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture &amp; No Fire.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                        |                    |

# 广州海关技术中心

GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER



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国际互认  
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TESTING  
CNAS L2322

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| 序号<br>No.                                                                                                              | 附表 8<br>Appendix 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 测试项目名称<br>Name of test |                    | 强制放电<br>Forced discharge |              |
|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------|--------------------------|--------------|
| 标准要求<br>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。<br>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<br>Sample status                                                                                                  | C11#~C20#：第一个循环完全放电的电芯；<br>C11#~C20#: first cycle in fully discharged states;<br>C21#~C30#：第二十五个循环完全放电的电芯。<br>C21#~C30#: after 25 cycles in fully discharged states.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |                    |                          |              |
| 样品编号<br>Sample No.                                                                                                     | 测试结果<br>Test result                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 备注<br>Remark           | 样品编号<br>Sample No. | 测试结果<br>Test result      | 备注<br>Remark |
| C11#                                                                                                                   | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | /                      | C21#               | O                        | /            |
| C12#                                                                                                                   | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | /                      | C22#               | O                        | /            |
| C13#                                                                                                                   | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | /                      | C23#               | O                        | /            |
| C14#                                                                                                                   | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | /                      | C24#               | O                        | /            |
| C15#                                                                                                                   | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | /                      | C25#               | O                        | /            |
| C16#                                                                                                                   | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | /                      | C26#               | O                        | /            |
| C17#                                                                                                                   | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | /                      | C27#               | O                        | /            |
| C18#                                                                                                                   | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | /                      | C28#               | O                        | /            |
| C19#                                                                                                                   | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | /                      | C29#               | O                        | /            |
| C20#                                                                                                                   | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | /                      | C30#               | O                        | /            |
| 注： D-解体； R-破裂； F-起火； O-无解体、无破裂、无起火。<br>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

#### 电池与电芯/Battery and Cell



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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)

电话(Tel): 020-38669019

电子邮箱(E-mail): [itl@iqtc.cn](mailto:itl@iqtc.cn)

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## UN38.3 试验概要

### UN38.3 test summary

| 单位信息 Company information                |                                                                                                                                                                                  |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 委托单位信息<br>Applicant's<br>Information    | 深圳市比亚迪电子有限公司<br>Shenzhen BYD Electronics Co., Ltd.                                                                                                                               |
|                                         | 地址：深圳市大鹏新区葵涌街道葵涌社区延安路1号比亚迪A-4#厂房301<br>Address: Room 301 of BYD A-4 Building, No.1 Yan'an Road, Kuichong Street, Dapeng New District, Shenzhen                                   |
|                                         | 电话号码 Phone number: +86- 0755-89888888-62113                                                                                                                                      |
|                                         | 电子邮箱 Email address: wen.yanfang@byd.com                                                                                                                                          |
|                                         | 网址 Website: http://www.byd.com.cn                                                                                                                                                |
| 生产单位信息<br>Manufacturer's<br>Information | 深圳市比亚迪电子有限公司<br>Shenzhen BYD Electronics Co., Ltd.                                                                                                                               |
|                                         | 地址：深圳市大鹏新区葵涌街道葵涌社区延安路1号比亚迪A-4#厂房301<br>Address: Room 301 of BYD A-4 Building, No.1 Yan'an Road, Kuichong Street, Dapeng New District, Shenzhen                                   |
|                                         | 电话号码 Phone number: +86- 0755-89888888-62113                                                                                                                                      |
|                                         | 电子邮箱 Email address: wen.yanfang@byd.com                                                                                                                                          |
|                                         | 网址 Website: http://www.byd.com.cn                                                                                                                                                |
| 试验实验室<br>Test laboratory                | 名称：广州海关技术中心<br>Name: GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER                                                                                                                |
|                                         | 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）<br>Address: Room C102, No.1 Nanxiangzhi Road, Science City, Guangzhou, Guangdong, China<br>(Light Industry Testing Laboratory in Science City) |
|                                         | 电话号码 Phone number: +86-020-38669019                                                                                                                                              |
|                                         | 电子邮箱 Email address: itl@iqtc.cn                                                                                                                                                  |
|                                         | 网址 Website: www.iqtc.cn                                                                                                                                                          |



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## 电池信息 Battery information

|                           |                            |                              |                                                      |
|---------------------------|----------------------------|------------------------------|------------------------------------------------------|
| 名称<br>Name                | Battery-Box Premium Module | 型号<br>Model                  | HVS                                                  |
| 标称电压<br>Nominal voltage   | 102.4V                     | 容量<br>Capacity               | 25 Ah                                                |
| 额定瓦时值<br>Watt-hour rating | 2.56 kWh                   | 样品外观<br>Appearance           | 银灰色金属外壳<br>Silver gray metal shell                   |
| 质量<br>Mass                | 36.4 kg                    | 物理描述<br>Physical description | 长方体 Cuboid<br>584.46mm(W)×297.60mm(D)<br>×255.5mm(H) |

电池图片  
Battery picture



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| 测试信息 Test information                   |                                                                                                                                                                                                                                                              |                               |                                                                                                     |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------|
| UN38.3 测试报告编号<br>UN38.3 Test report No. | 01052000000884-1(E)                                                                                                                                                                                                                                          | 测试报告日期<br>Date of test report | 2020-04-01                                                                                          |
| 测试标准<br>Test standard                   | 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<br>UNITED NATIONS “Recommendations on the TRANSPORT OF DANGEROUS GOODS”, Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6/Amend.1                                                                     |                               |                                                                                                     |
| T.1 高度模拟<br>Altitude simulation         | 合格 Passed                                                                                                                                                                                                                                                    | T.2 温度试验<br>Thermal test      | 合格 Passed                                                                                           |
| T.3 振动<br>Vibration                     | 合格 Passed                                                                                                                                                                                                                                                    | T.4 冲击<br>Shock               | 合格 Passed                                                                                           |
| T.5 外部短路<br>External short circuit      | 合格 Passed                                                                                                                                                                                                                                                    | T.6 挤压<br>Crush               | 合格 Passed                                                                                           |
| T.7 过度充电<br>Overcharge                  | 合格 Passed                                                                                                                                                                                                                                                    | T.8 强制放电<br>Forced discharge  | 合格 Passed                                                                                           |
| 38.3.3(f)                               | 不适用 Not applicable                                                                                                                                                                                                                                           | 38.3.3(g)                     | 不适用 Not applicable                                                                                  |
| 结论<br>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。<br>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<br>Remark                            | 检测结果仅对样品有效。<br>The test results are only valid for the test samples submitted by the applicant.                                                                                                                                                              |                               |                                                                                                     |
| 签名及职务<br>Signature & Title              | <br>实验室主任 Laboratory Director                                                                                                                                             | 签发日期<br>Issued date           | <br>2020-04-01 |

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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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