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电话Tel：020-22131000　邮箱Email：ppdc@iqtcnet.cn　网址Website：https://www.iqtcnet.cn

UN38.3 报告

UN38.3 Test Report

样品名称：　锂离子蓄电池

Sample Name:　Lithium ion batteries

委托单位：　华为数字能源技术有限公司

Applicant:　Huawei Digital Power Technologies Co., Ltd.

提取码：350562
验 证 平 台 ：
https://css.iqtcnet.cn

广 州 海 关 技 术 中 心

GUANGZHOU CUSTOMS DISTRICT TECHNOLOGY CENTER

广州海关技术中心
检验检测专用章
(16)
4401060157181

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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 Sample Name	锂离子蓄电池 Lithium ion batteries		
型号 Model	LUNA2000-54-1E1		
委托单位 Applicant	华为数字能源技术有限公司 Huawei Digital Power Technologies Co., Ltd.		
委托单位地址 Applicant Address	深圳市福田区香蜜湖街道香安社区安托山六路33号安托山总部大厦A座研发39层01号 Office 01, 39th Floor, Block A, Antuoshan Headquarters Towers, 33 Antuoshan 6th Road, Futian District, Shenzhen, 518043, P.R.C.		
制造商 Manufacturer	华为数字能源技术有限公司 Huawei Digital Power Technologies Co., Ltd.		
制造商地址 Manufacturer Address	深圳市福田区香蜜湖街道香安社区安托山六路33号安托山总部大厦A座研发39层01号 Office 01, 39th Floor, Block A, Antuoshan Headquarters Towers, 33 Antuoshan 6th Road, Futian District, Shenzhen, 518043, P.R.C.		
生产工厂 Factory	惠州市欣旺达能源科技有限公司 Huizhou Sunwoda Energy Technology Co., Ltd.		
生产工厂地址 Factory Address	博罗县园洲镇沥西经济联合社振兴大道“基围笃”（土名）地段 “Jiweidu” (Tuming Section) section of Zhenxing Avenue, Lixi Economic Union, Yuanzhou Town, Boluo County, Huizhou City, Guangdong, P.R. China		
样品外观 Appearance	黑色金属外壳 Black metal shell		
测试方法和判定标准 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.8, 38.3 UNITED NATIONS “Recommendations on the TRANSPORT OF DANGEROUS GOODS”, Manual of Tests and Criteria ST/SG/AC.10/11/Rev.8, 38.3		
接样时间 Accepted date	2024-12-01	测试日期 Test date	2024-12-01~2024-12-31
测试项目 Test items	高度模拟、温度试验、振动、冲击、外部短路、挤压、过度充电、强制放电。 Altitude simulation, Thermal test, Vibration, Shock, External short circuit, Crush, Overcharge, Forced discharge.		
结论 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.8, 38.3标准要求。 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.8, 38.3.		
备注 Remark	1.随附UN38.3试验概要（编号：1124003614-2）。 Attached with UN38.3 test summary (No.: 1124003614-2).		

批准 Approver：　　审核 Checker：叶中轩　　主检 Appraiser：张佳

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电池组信息：
The batteries information:

电池类型 Battery type	锂离子电池 Lithium ion batteries	标称电压 Nominal Voltage	192V
额定容量 Rated Capacity	280Ah	总能量 Total Energy	53.76kWh
充电限制电压 Limited Charge Voltage	216V	标准充电电流 Standard Charge Current	56A
最大充电电流 Maximum Charge Current	280A	充电截止电流 Charge Cut-off Current	/
标准放电电流 Standard discharge Current	56A	最大放电电流 Maximum Discharge Current	280A
放电截止电压 Discharge Cut-off Voltage	162V	物理描述 Physical description	长方体 Cuboid
电芯数量 Cell Quantity	60	重量 Mass	395±15kg
电芯容量 Cell Capacity	280Ah	电芯型号 Cell Model	LF280K
电芯生产单位 Manufacturer of cell	湖北亿纬动力有限公司 EVE POWER Co., Ltd		

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序号 No.	测试项目名称 Name of test	标准要求或标准条款号 Standard requirement or the clause number of standard	测试结果 Test result	本项结论 Test conclusion	备注 Remark
1	高度模拟 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.8, 38.3 试验 T.1 Test T.1	见附表 1 See Appendix 1	合格 Passed	/
2	温度试验 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.8, 38.3 试验 T.2 Test T.2	见附表 2 See Appendix 2	合格 Passed	/
3	振动 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.8, 38.3 试验 T.3 Test T.3	见附表 3 See Appendix 3	合格 Passed	/
4	冲击 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.8, 38.3 试验 T.4 Test T.4	见附表 4 See Appendix 4	合格 Passed	/
5	外部短路 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.8, 38.3 试验 T.5 Test T.5	见附表 5 See Appendix 5	合格 Passed	/
6	挤压 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.8, 38.3 试验 T.6 Test T.6	见附表 6 See Appendix 6	合格 Passed	/
7	过度充电 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.8, 38.3 试验 T.7 Test T.7	见附表 7 See Appendix 7	合格 Passed	/
8	强制放电 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.8, 38.3 试验 T.8 Test T.8	见附表 8 See Appendix 8	合格 Passed	/
测试环境 Test environment condition		环境温度：20℃-25℃；环境湿度：45%-75% Ambient temperature: 20℃-25℃, Ambient humidity: 45%-75%			

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<table>
<tr><td>序号
No.</td><td colspan="3">附表 1
Appendix 1</td><td colspan="2">测试项目名称
Name of test</td><td colspan="2">高度模拟
Altitude simulation</td></tr>
<tr><td>标准要求
Requirement of Standard</td><td colspan="7">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）。
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.</td></tr>
<tr><td>样品状态
Sample status</td><td colspan="7">b1#~b2#：第一个循环完全充电的电池；
b1#~b2#: first cycle in fully charged states;
b3#~b4#：第二十五个循环完全充电的电池。
b3#~b4#: after 25 cycles ending in fully charged states.</td></tr>
<tr><td rowspan="2">样品编号
Sample No.</td><td colspan="2">测试前 Before</td><td colspan="2">测试后 After</td><td rowspan="2">质量损失
Mass loss (%)</td><td rowspan="2">剩余电压
Residual OCV(%)</td><td rowspan="2">测试结果
Test result</td></tr>
<tr><td>电池质量
m₁(kg)</td><td>开路电压
v₁(V)</td><td>电池质量
m₂(kg)</td><td>开路电压
v₂(V)</td></tr>
<tr><td>b1#</td><td>400.0</td><td>200.6</td><td>400.0</td><td>200.5</td><td>0.00</td><td>99.95</td><td>O</td></tr>
<tr><td>b2#</td><td>400.2</td><td>200.4</td><td>400.2</td><td>200.3</td><td>0.00</td><td>99.95</td><td>O</td></tr>
<tr><td>b3#</td><td>399.8</td><td>200.2</td><td>399.8</td><td>200.2</td><td>0.00</td><td>100.00</td><td>O</td></tr>
<tr><td>b4#</td><td>400.0</td><td>200.6</td><td>400.0</td><td>200.5</td><td>0.00</td><td>99.95</td><td>O</td></tr>
<tr><td colspan="8">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。
Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O- No Leakage, No Venting, No Disassembly, No Rupture & No Fire.</td></tr>
</table>

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<table>
<tr><td>序号
No.</td><td>附表 2
Appendix 2</td><td colspan="3">测试项目名称
Name of test</td><td colspan="3">温度试验
Thermal test</td></tr>
<tr><td>标准要求
Requirement of Standard</td><td colspan="7">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）。
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.</td></tr>
<tr><td>样品状态
Sample status</td><td colspan="7">b1#~b2#：第一个循环完全充电的电池；
b1#~b2#: first cycle in fully charged states;
b3#~b4#：第二十五个循环完全充电的电池。
b3#~b4#: after 25 cycles ending in fully charged states.</td></tr>
<tr><td rowspan="2">样品编号
Sample No.</td><td colspan="2">测试前 Before</td><td colspan="2">测试后 After</td><td rowspan="2">质量损失
Mass loss (%)</td><td rowspan="2">剩余电压
Residual OCV(%)</td><td rowspan="2">测试结果
Test result</td></tr>
<tr><td>电池质量
m_1(kg)</td><td>开路电压
v_1(V)</td><td>电池质量
m_2(kg)</td><td>开路电压
v_2(V)</td></tr>
<tr><td>b1#</td><td>400.0</td><td>200.5</td><td>399.8</td><td>198.1</td><td>0.05</td><td>98.80</td><td>O</td></tr>
<tr><td>b2#</td><td>400.2</td><td>200.3</td><td>400.0</td><td>197.9</td><td>0.05</td><td>98.80</td><td>O</td></tr>
<tr><td>b3#</td><td>399.8</td><td>200.2</td><td>399.6</td><td>197.6</td><td>0.05</td><td>98.70</td><td>O</td></tr>
<tr><td>b4#</td><td>400.0</td><td>200.5</td><td>399.8</td><td>198.1</td><td>0.05</td><td>98.80</td><td>O</td></tr>
<tr><td colspan="8">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。
Note: L-Leakage, V-Venting, D-Disassembly, R-Rupture, F-Fire, O- No Leakage, No Venting, No Disassembly, No Rupture & No Fire.</td></tr>
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序号 No.	附表 3 Appendix 3	测试项目名称 Name of test	振动 Vibration
标准要求 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 $1g_n$ 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 $2g_n$(频率约为 25Hz).将最大加速度保持在 $2g_n$ 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）。 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 $1g_n$ 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 $2g_n$ occurs (approximately 25Hz). A peak acceleration of $2g_n$ 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 Sample status	b1#~b2#：第一个循环完全充电的电池； b1#~b2#: first cycle in fully charged states; b3#~b4#：第二十五个循环完全充电的电池。 b3#~b4#: after 25 cycles ending in fully charged states.		

样品编号 Sample No.	测试前 Before		测试后 After		质量损失 Mass loss (%)	剩余电压 Residual OCV(%)	测试结果 Test result
	电池质量 m_1(kg)	开路电压 v_1(V)	电池质量 m_2(kg)	开路电压 v_2(V)			
b1#	399.8	198.1	399.8	198.0	0.00	99.95	O
b2#	400.0	197.9	400.0	197.8	0.00	99.95	O
b3#	399.6	197.6	399.6	197.6	0.00	100.00	O
b4#	399.8	198.1	399.8	198.0	0.00	99.95	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。
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 No.	附表 4 Appendix 4	测试项目名称 Name of test	冲击 Shock
标准要求 Requirement 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 $50g_n$ 或 $g_n=\sqrt{(30000/mass)}$ 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）。 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 $50g_n$ or acceleration $(g_n)=\sqrt{(30000/mass)}$ 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 Sample status	b1#~b2#：第一个循环完全充电的电池； b1#~b2#: first cycle in fully charged states; b3#~b4#：第二十五个循环完全充电的电池。 b3#~b4#: after 25 cycles ending in fully charged states.		

样品编号 Sample No.	测试前 Before		测试后 After		质量损失 Mass loss (%)	剩余电压 Residual OCV(%)	测试结果 Test result
	电池质量 m_1(kg)	开路电压 v_1(V)	电池质量 m_2(kg)	开路电压 v_2(V)			
b1#	399.8	198.0	399.8	198.0	0.00	100.00	O
b2#	400.0	197.8	400.0	197.8	0.00	100.00	O
b3#	399.6	197.6	399.6	197.5	0.00	99.95	O
b4#	399.8	198.0	399.8	198.0	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。
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 No.	附表 5 Appendix 5	测试项目名称 Name of test	外部短路 External short circuit
标准要求 Requirement of Standard	待试验电池或电池组的外壳温度稳定在 57±4℃后，在 57±4℃下使电池或电池组经受总外电阻小于 0.1Ω 的短路条件，当电池或电池组外壳温度回到 57±4℃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 170℃，并且试验后 6h 内应无解体、无破裂和无燃烧。 The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches 57±4℃ and then the cell or battery shall be subjected to a short circuit condition with a total external resistance of less than 0.1 ohm at 57±4℃. This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to 57±4℃. 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 170℃ and there is no disassembly, no rupture and no fire within six hours of this test.		
样品状态 Sample status	b1#~b2#：第一个循环完全充电的电池； b1#~b2#: first cycle in fully charged states; b3#~b4#：第二十五个循环完全充电的电池。 b3#~b4#: after 25 cycles ending in fully charged states.		

样品编号 Sample No.	样品表面最高温度 Max External Temperature(℃)	测试结果 Test result	备注 Remark
b1#	55.7	O	/
b2#	55.2	O	/
b3#	55.4	O	/
b4#	55.6	O	/

注： D-解体； R-破裂； F-起火； O-无解体、无破裂、无起火。
Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture & No Fire.

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<table>
<tr><td>序号
No.</td><td colspan="3">附表 6
Appendix 6</td><td colspan="2">测试项目名称
Name of test</td><td colspan="3">挤压
Crush</td></tr>
<tr><td>标准要求
Requirement of Standard</td><td colspan="8">（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）：
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：
(a)施加的力量达到 13kN±0.78kN；
(b)电池的电压下降至少 100 毫伏；或
(c)电池变形量达原始厚度的 50％或以上。
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。圆柱形电池应从与纵轴垂直的方向施压。每个电池只做一次挤压试验。
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。
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.
(a)The applied force reaches 13kN±0.78kN;
(b)The voltage of the cell drops by at least 100mV;or
(c)The cell is deformed by 50% or more of its original thickness.
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.
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.</td></tr>
<tr><td>样品状态
Sample status</td><td colspan="8">C1#~C5#：第一个循环 50%的额定容量的电芯。
C1#~C5#: first cycle at 50% of the design rated capacity of cell.
C6#~C10#：第二十五个循环 50%的额定容量的电芯。
C6#~C10#: after 25 cycles at 50% of the design rated capacity of cell.</td></tr>
<tr><td>样品编号
Sample No.</td><td>样品表面最高温度
Max External Temperature(℃)</td><td>测试结果
Test result</td><td>备注
Remark</td><td>样品编号
Sample No.</td><td>样品表面最高温度
Max External Temperature(℃)</td><td>测试结果
Test result</td><td colspan="2">备注
Remark</td></tr>
<tr><td>C1#</td><td>20.7</td><td>O</td><td>/</td><td>C6#</td><td>22.2</td><td>O</td><td colspan="2">/</td></tr>
<tr><td>C2#</td><td>21.6</td><td>O</td><td>/</td><td>C7#</td><td>21.5</td><td>O</td><td colspan="2">/</td></tr>
<tr><td>C3#</td><td>20.9</td><td>O</td><td>/</td><td>C8#</td><td>21.8</td><td>O</td><td colspan="2">/</td></tr>
<tr><td>C4#</td><td>21.5</td><td>O</td><td>/</td><td>C9#</td><td>22.1</td><td>O</td><td colspan="2">/</td></tr>
<tr><td>C5#</td><td>21.3</td><td>O</td><td>/</td><td>C10#</td><td>21.5</td><td>O</td><td colspan="2">/</td></tr>
<tr><td colspan="9">注：　D-解体；　R-破裂；　F-起火；　O-无解体、无破裂、无起火。
Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture & No Fire.</td></tr>
</table>

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序号 No.	附表 7 Appendix 7	测试项目名称 Name of test	过度充电 Overcharge
标准要求 Requirement of Standard	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： （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。 （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。 The charge current shall be twice the manufacturer's recommended maximum continuous charge current. The minimum voltage of the test shall be as follows: (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. (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. 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.		
样品状态 Sample status	/		

样品编号 Sample No.	测试结果 Test result	备注 Remark
/	/	未安装过度充电保护装置、按设计要求只能用在另一个带过度充电保护装置的电池组或设备中的电池组或单一电池电池组，无需满足本项试验的要求。 Batteries or single cell batteries not equipped with battery overcharge protection that are designed for use only as a component in another battery or in equipment, which affords such protection, are not subject to the requirements of this test.
/	/	
/	/	
/	/	

注： D-解体； R-破裂； F-起火； O-无解体、无破裂、无起火。
Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture & No Fire.

序号 No.	附表 8 Appendix 8		测试项目名称 Name of test		强制放电 Forced discharge
标准要求 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。 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 Sample status	C11#~C20#：第一个循环完全放电的电芯； C11#~C20#: first cycle in fully discharged states; C21#~C30#：第二十五个循环完全放电的电芯。 C21#~C30#: after 25 cycles in fully discharged states.				
样品编号 Sample No.	测试结果 Test result	备注 Remark	样品编号 Sample No.	测试结果 Test result	备注 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。 Note: D-Disassembly, R-Rupture, F-Fire, O-No Disassembly, No Rupture & No Fire.					

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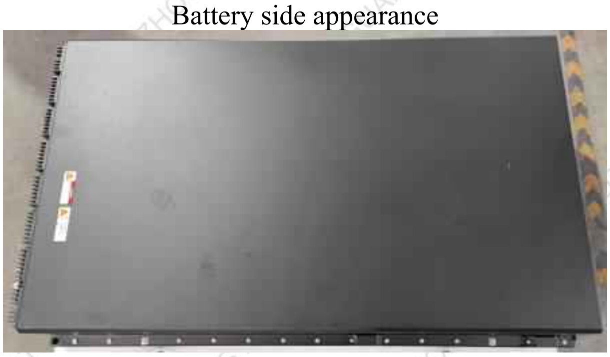
样品图片
Photo of the sample

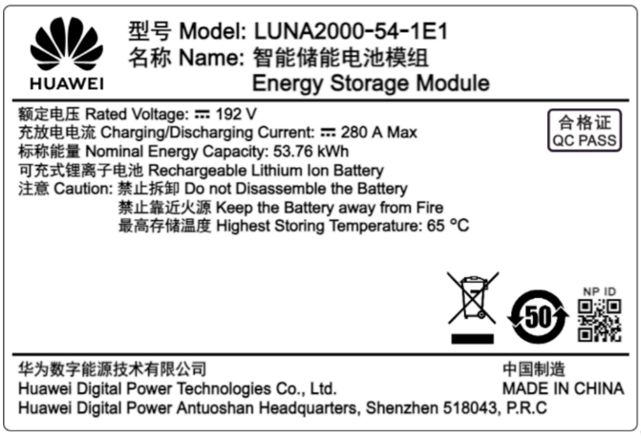
电池正面外观
Battery front appearance

电池侧面外观
Battery side appearance

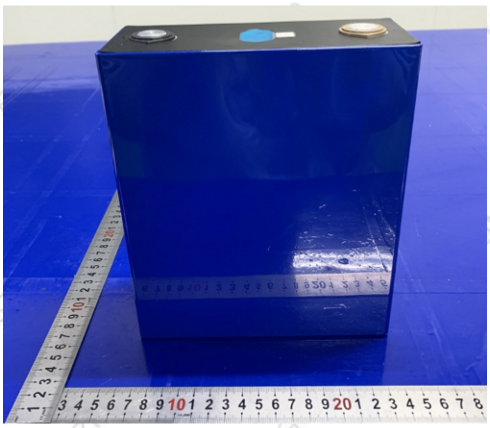
电池侧面外观
Battery side appearance



电池铭牌(含 Wh)
Battery nameplate (With Wh)



电芯
Cell



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声　明
Statement

1.本报告无检测单位公章无效。

The test report is invalid without the official stamp of IQTC.

2 本报告无批准人、审核人及主检人签名无效。

The test report is invalid without the signatures of Approver, Checker and Appraiser.

3.本报告涂改无效。未经本实验室书面同意，不得部分地复制本报告。

The test report is invalid if altered. Nobody is allowed to photocopy or partly photocopy this report without written permission of IQTC.

4.客户必须如实提供样品及资料，并保证申报品名和样品以及运输货物相同，否则本检测单位不承担任何相关责任。

The client should provide samples and relevant data, at the same time, they should guarantee the consistence of the product's name they declared, the samples they provided and the goods to be transported. Otherwise we will not bear any relevant responsibilities.

5.对检测报告若有异议，应于收到报告之日起十五天内向检测单位提出。

Objection to the test report must be submitted to IQTC within 15 days

6.本报告仅对送检样品负责。

The test report is valid for the tested samples only.

7.检测地址：广东省广州市科学城南翔支路 1 号 C102 房（汽车与装备检测研究所科学城）

Test Address: Room C102, No.1 Nanxiangzhi Road, Science City, Guangzhou, Guangdong, China (Institute of Automobile and Equipment Testing in Science City)

电话(Tel)：020-38669019-811

电子邮箱(E-mail)：battery@iqtcnet.cn

* * * * 报告结束 End of report * * * *