



中国认可  
国际互认  
检测  
TESTING  
CNAS L0095

# CQC 标志认证 试验报告

新申请 变更 监督 复审 其他:

申请编号: **V2018CQC001031-369263**  
(任务编号)

产品名称: **24V 锂电池组**

型 号: **NPP-24V60AH 1440Wh (6IXR19/65-24)**

检测机构: **威凯检测技术有限公司**



<p>申请编号：V2018CQC001031-369263                  (任务编号)                  样品名称：24V 锂电池组                  型号规格：                  NPP-24V60AH 1440Wh (6IXR19/65-24)                      标称电压 24V                      额定容量 60Ah                  样品数量：21 个电池组,43 个电池                  样品生产序号：/                  收样日期：2018-05-28                  样品来源：生产厂送样                  抽样通知书编号：/</p>	<p>申请人：东莞市耐普新能源有限公司                  申请人地址：东莞市虎门镇沙角社区凤凰西路南侧边 A 区 3 号 5 楼                  制造商：东莞市耐普新能源有限公司                  制造商地址：东莞市虎门镇沙角社区凤凰西路南侧边 A 区 3 号 5 楼                  生产厂：东莞市耐普新能源有限公司                  生产厂地址：东莞市虎门镇沙角社区凤凰西路南侧边 A 区 3 号 5 楼</p>
<p>试验依据标准：                  IEC 62133-2012 Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications</p>	
<p>试验结论：合格</p>	
<p>本申请单元所覆盖的产品型号规格及相关情况说明：见本报告第 2 页样品描述及说明</p>	
<p>主检：魏国华 签名：                    日期：</p>	<p>(检测机构名称、盖章)                  年 月 日</p>
<p>审核：张思瑶 签名：                    日期：</p>	
<p>签发：黄 鲲 签名：                    日期：</p>	
<p>备注</p>	<p>认证实施规则：CQC11-464112-2015</p>

## 样品描述及说明

### 1. 受检样品一般描述：

本申请产品属于： 电池  电池组

本申请产品用于： 手机  平板电脑  笔记本电脑  相机摄像机  蓝牙耳机  
 播放器  其他 灯具

电池正极材料类别： 钴酸锂  磷酸亚铁锂  锂酸锰  三元材料  其他

电池/电池组的安装方式： 用户可更换型  非用户更换型

电池/电池组外观： 圆柱式  方式  组合式  其他

电池/电池组内部连接方式： 串联  并联  串联与并联均有  其他

电池/电池组保护方式： 电子线路  热保险丝  热敏电阻  其他

电池/电池组极端类型： 插头  压接片  引线  熔焊  插入到输出插座的插脚  其他

电池/电池组外壳的材料： 不锈钢  铝塑膜  塑套  注塑成形  其他

### 2. 受检样品型号及规格：

型号：NPP-24V60AH 1440Wh (6IXR19/65-24)

标称电压：24V 额定容量：60Ah 瓦时：1440Wh

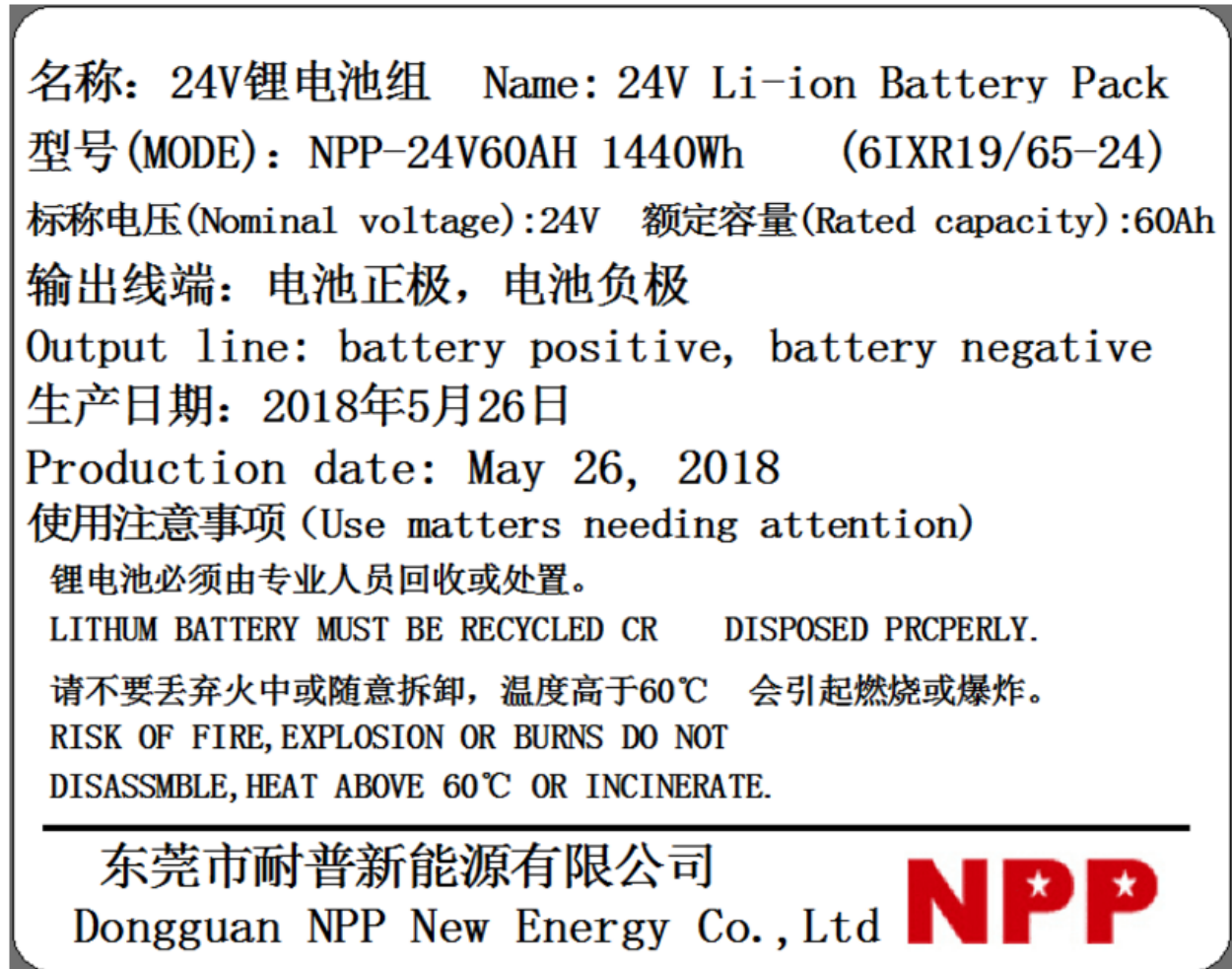
### 3. 产品覆盖型号：无

### 4. 电池组保护电路图：见本报告照片页第 20 页（附件四）

### 5. 产品内部结构图（剖面图）：见本报告照片页第 19 页（附件三）

样品描述及说明

6. 产品标签图:



7. 产品特殊描述:

- 1) 本次申请送检的锂电池组的组成电池型号规格为: 型号: 18650, 标称电压 3.7V:, 额定容量: 2500mAh。该电池已通过 IEC62133:2012(ed.2)测试, 测试机构为威凯检测技术有限公司;
- 2) 该样品为锂离子可充电电池组, 组成方式为 24 并 6 串, 具有模制塑性壳体;
- 3) 6IXR19/65-24 是该电池组的 IEC62133: 2012(ED.2)标准设计型号;
- 4) 本报告第 4-21 页是依据 IEC62133: 2012 的条款进行测试出具的数据报告。

一般评述:

本报告出现的试验结果仅与试验样品有关。

除非全部复制, 否则无试验室书面批准本报告不得部分复制。

可能的试验情况判定	
—试验情况不适用本试验产品	N/A
—试验样品满足要求	P
—试验样品不满足要求	F
—试验样品不需要判定	-

IEC 62133: 2012			
条款	要求 - 试验	结果-评述	判定
<b>4</b>	<b>Parameter measurement tolerances</b>		<b>P</b>
	Parameter measurement tolerances		P
<b>5</b>	<b>General safety considerations</b>		<b>P</b>
5.1	General		P
5.2	Insulation and wiring		N/A
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery (excluding electrical contact surfaces) is not less than 5 MΩ	No exposed metal surface.	N/A
	Insulation resistance (MΩ) .....	—	—
	Internal wiring and insulation are sufficient to withstand maximum anticipated current, voltage and temperature requirements		N/A
	Orientation of wiring maintains adequate creepage and clearance distances between conductors		N/A
	Mechanical integrity of internal connections accommodates reasonably foreseeable misuse		N/A
5.3	Venting		P
	Battery cases and cells incorporate a pressure relief mechanism or are constructed so that they relieve excessive internal pressure at a value and rate that will preclude rupture, explosion and self-ignition	Positive pressure relief valve is provided on the component cell.	P
	Encapsulation used to support cells within an outer casing does not cause the battery to overheat during normal operation nor inhibit pressure relief		P
5.4	Temperature/voltage/current management		P
	Batteries are designed such that abnormal temperature rise conditions are prevented	Protection circuit was used. See the battery protection circuit in Annex 4.	P
	Batteries are designed to be within temperature, voltage and current limits specified by the cell manufacturer	Protection circuit was used. See the battery protection circuit in Annex 4.	P
	Batteries are provided with specifications and charging instructions for equipment manufacturers so that associated chargers are designed to maintain charging within the temperature, voltage and current limits specified	The charging limits specified in the manufacture's specifications.	P
5.5	Terminal contacts		P

IEC 62133: 2012			
条款	要求 - 试验	结果-评述	判定
	Terminals have a clear polarity marking on the external surface of the battery	The gray wire is positive terminal, and the blue wire is negative terminal.	N/A
	The size and shape of the terminal contacts ensure that they can carry the maximum anticipated current		P
	External terminal contact surfaces are formed from conductive materials with good mechanical strength and corrosion resistance		P
	Terminal contacts are arranged to minimize the risk of short circuits		P
5.6	Assembly of cells into batteries		N/A
5.6.1	If there is more than one battery housed in a single battery case, cells used in the assembly of each battery have closely matched capacities, be of the same design, be of the same chemistry and be from the same manufacturer	The battery is composed by 6 series cells and 24 parallel cells.	N/A
	Each battery has an independent control and protection		N/A
	Manufacturers of cells make recommendations about current, voltage and temperature limits so that the battery manufacturer/designer may ensure proper design and assembly		N/A
	Batteries that are designed for the selective discharge of a portion of their series connected cells incorporate separate circuitry to prevent the cell reversal caused by uneven discharges		N/A
	Protective circuit components are added as appropriate and consideration given to the end-device application		N/A
	When testing a battery, the manufacturer of the battery provides a test report confirming the compliance according to this standard		N/A
5.6.2	Design recommendation for lithium systems only		P
	For the battery consisting of a single cell or a single cellblock: - Charging voltage of the cell does not exceed the upper limit of the charging voltage specified in Clause 8.1.2, Table 4; or		N/A
	- Charging voltage of the cell does not exceed the different upper limit of the charging voltage determined through Clause 8.1.2, NOTE 1.		N/A

IEC 62133: 2012			
条款	要求 - 试验	结果-评述	判定
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks: - The voltages of any one of the single cells or single cellblocks does not exceed the upper limit of the charging voltage, specified in Clause 8.1.2, Table 4, by monitoring the voltage of every single cell or the single cellblocks; or	The battery is composed by 6 series cells and 24 parallel cells.	N/A
	- The voltages of any one of the single cells or single cellblocks does not exceed the different upper limit of the charging voltage, determined through Clause 8.1.2, NOTE 1, by monitoring the voltage of every single cell or the single cellblocks		P
	For the battery consisting of series-connected plural single cells or series-connected plural cellblocks: - Charging is stopped when the upper limit of the charging voltage, specified in Clause 8.1.2, Table 4, is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks; or		N/A
	- Charging is stopped when the upper limit of the different charging voltage, determined through Clause 8.1.2, NOTE 1, is exceeded for any one of the single cells or single cellblocks by measuring the voltage of every single cell or the single cellblocks		P
5.7	Quality plan		P
	The manufacturer prepares and implements a quality plan that defines procedures for the inspection of materials, components, cells and batteries and which covers the whole process of producing each type of cell or battery	ISO 9001 Certificate Was submitted by the manufacture. See Annex 5 for detail.	P
<b>6</b>	<b>Type test conditions</b>		P
	Tests were made with the number of cells or batteries specified in Table 1 for nickel-cadmium and nickel-metal hydride systems and Table 2 for lithium systems, using cells or batteries that are not more than six months old	Tests are performed according to specified in table 2 of the standard.	P
	Unless noted otherwise in the test methods, testing was conducted in an ambient of 20°C ± 5°C.	The tests are conducted in an ambient of 20°C ± 5°C.	P
<b>7</b>	<b>Specific requirements and tests (nickel systems)</b>		N/A
7.1	Charging procedure for test purposes	No applicable for lithium system	N/A

IEC 62133: 2012			
条款	要求 - 试验	结果-评述	判定
7.2	Intended use		N/A
7.2.1	Continuous low-rate charging (cells)		N/A
	Results: No fire. No explosion		N/A
7.2.2	Vibration		N/A
	Results: No fire. No explosion. No leakage		N/A
7.2.3	Moulded case stress at high ambient temperature		N/A
	Oven temperature (°C)..... :		—
	Results: No physical distortion of the battery casing resulting in exposure if internal components		N/A
7.2.4	Temperature cycling		N/A
	Results: No fire. No explosion. No leakage.		N/A
7.3	Reasonably foreseeable misuse		N/A
7.3.1	Incorrect installation cell		N/A
	The test was carried out using: - Four fully charged cells of the same brand, type, size and age connected in series, with one of them reversed; or		N/A
	- A stabilized dc power supply.		N/A
	Results: No fire. No explosion..... :		N/A
7.3.2	External short circuit		N/A
	The cells or batteries were tested until one of the following occurred: - 24 hours elapsed; or		N/A
	- The case temperature declined by 20% of the maximum temperature rise		N/A
	Results: No fire. No explosion..... :		N/A
7.3.3	Free fall		N/A
	Results: No fire. No explosion.		N/A
7.3.4	Mechanical shock (crash hazard)		N/A
	Results: No fire. No explosion. No leakage.		N/A
7.3.5	Thermal abuse		N/A
	Oven temperature (°C)..... :		—
	Results: No fire. No explosion.		N/A
7.3.6	Crushing of cells		N/A
	The crushing force was released upon: - The maximum force of 13 kN ± 1 kN has been applied; or		N/A



IEC 62133: 2012			
条款	要求 - 试验	结果-评述	判定
	- An abrupt voltage drop of one-third of the original voltage has been obtained		N/A
	The cell is prismatic type and a second set of samples was tested, rotated 90° around longitudinal axis compared to the first set		N/A
	Results: No fire. No explosion..... :		N/A
7.3.7	Low pressure		N/A
	Chamber pressure (kPa)..... :		—
	Results: No fire. No explosion. No leakage.		N/A
7.3.8	Overcharge		N/A
	Results: No fire. No explosion..... :		N/A
7.3.9	Forced discharge		N/A
	Results: No fire. No explosion..... :		N/A
<b>8</b>	<b>Specific requirements and tests (lithium systems)</b>		<b>P</b>
8.1	Charging procedures for test purposes		P
8.1.1	First procedure: This charging procedure applied to tests other than those specified in 8.1.2		P
8.1.2	Second procedure: This charging procedure applied to the tests of 8.3.1, 8.3.2, 8.3.4, 8.3.5, and 8.3.9		P
	If a cell's specified upper and/or lower charging temperature exceeds values for the upper and/or lower limit test temperatures of Table 4, the cells were charged at the specified values plus 5 °C for the upper limit and minus 5 °C for the lower limit	The upper charging temperature is 45°C and the lower charging temperature is 0°C in specification.	P
	A valid rationale was provided to ensure the safety of the cell (see Figure A.1) .....	See the test result.	P
	For a different upper limit charging voltage (i.e. other than for lithium cobalt oxide systems at 4,25 V), the applied upper limit charging voltage and upper limit charging temperatures were adjusted accordingly	The upper limit charging voltage is 25.2V in specification.	P
	A valid rationale was provided to ensure the safety of the cell (see Figure A.1) .....	See the test result.	P
8.2	Intended use		P
8.2.1	Continuous charging at constant voltage (cells)	Sample No.: c1#-c5#	P
	Results: No fire. No explosion..... :		P
8.2.2	Moulded case stress at high ambient temperature (battery)	Sample No.: b1#-b3#	P
	Oven temperature (°C)..... :	130	—

IEC 62133: 2012			
条款	要求 - 试验	结果-评述	判定
	Results: No physical distortion of the battery casing resulting in exposure if internal components		P
8.3	Reasonably foreseeable misuse		P
8.3.1	External short circuit (cell)		P
	The cells were tested until one of the following occurred: - 24 hours elapsed; or		P
	- The case temperature declined by 20% of the maximum temperature rise		N/A
	Results: No fire. No explosion..... :	See table 8.3.1 for details	P
8.3.2	External short circuit (battery)		P
	The cells were tested until one of the following occurred: - 24 hours elapsed; or		P
	- The case temperature declined by 20% of the maximum temperature rise		N/A
	In case of rapid decline in short circuit current, the battery pack remained on test for an additional one hour after the current reached a low end steady state condition		N/A
	Results: No fire. No explosion..... :		P
8.3.3	Free fall	Sample No.: b14#-b16# c16#-c18#	P
	Results: No fire. No explosion.		P
8.3.4	Thermal abuse (cells)	Sample No.: c19#-c28#	P
	The cells were held at 130°C ± 2°C for: - 10 minutes; or		P
	- 30 minutes for large cells (gross mass of more than 500 g as defined in IEC 62281)		P
	Oven temperature (°C)..... :		—
	Gross mass of cell (g)..... :		—
	Results: No fire. No explosion.		P
8.3.5	Crush (cells)	See table 8.3.5 for details	P
	The crushing force was released upon: - The maximum force of 13 kN ± 1 kN has been applied; or		P
	- An abrupt voltage drop of one-third of the original voltage has been obtained; or		N/A
	- 10% of deformation has occurred compared to the initial dimension		N/A

IEC 62133: 2012			
条款	要求 - 试验	结果-评述	判定
	Results: No fire. No explosion..... :	See table 8.3.5 for details	P
8.3.6	Over-charging of battery		P
	Test was continued until the temperature of the outer casing: - Reached steady state conditions (less than 10°C change in 30-minute period); or		P
	- Returned to ambient		P
	Results: No fire. No explosion..... :	See table 8.3.6 for details.	P
8.3.7	Forced discharge (cells)		P
	Results: No fire. No explosion..... :		P
8.3.8	Transport tests	See table 8.3.7 for details.	P
	Manufacturer's documentation provided to show compliance with UN Recommendations on Transport of Dangerous Goods	Test report for UN38.3 is provided. The report No. is RZUN2018-1764, which is approved by CVC.	P
8.3.9	Design evaluation – Forced internal short circuit (cells)	No applicable for battery.	N/A
	The cells complied with national requirement for.. :		—
	The pressing was stopped upon: - A voltage drop of 50 mV has been detected; or		N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) has been reached		N/A
	Results: No fire .....		N/A
<b>9</b>	<b>Information for safety</b>		P
	The manufacturer of secondary cells ensures that information is provided about current, voltage and temperature limits of their products.	Information for safety mentioned in manufacturer's specifications.	P
	The manufacturer of batteries ensures that equipment manufacturers and, in the case of direct sales, end-users are provided with information to minimize and mitigate hazards.	Information for safety mentioned in manufacturer's specifications.	P
	Systems analyses performed by device manufacturers to ensure that a particular battery design prevents hazards from occurring during use of a product	Considered in end product.	P
	As appropriate, information relating to hazard avoidance resulting from a system analysis is provided to the end user .....	Considered in end product.	P
<b>10</b>	<b>Marking</b>		P
10.1	Cell marking		P

IEC 62133: 2012			
条款	要求 - 试验	结果-评述	判定
	Cells marked as specified in the applicable cell standards: IEC 61951-1, IEC 61951-2 or IEC 61960.	By agreement between the manufacturer and user, the cell mark of a battery need not be marked.	P
10.2	Battery marking		P
	Batteries marked in accordance with the requirements for the cells from which they are assembled.		P
	Batteries marked with an appropriate caution statement.		P
10.3	Other information		P
	Storage and disposal instructions marked on or supplied with the battery.	Information for disposal instructions mentioned in manufacturer's specifications.	P
	Recommended charging instructions marked on or supplied with the battery.	Information for recommended charging instructions mentioned in manufacturer's specifications.	P
<b>11</b>	<b>Packaging</b>		P
	The materials and packaging design are chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants.	The Packaging will be prepared according to the latest DGR Manual of IATA requirements when transported.	P
<b>Annex A</b>	<b>Charging range of secondary lithium ion cells for safe use</b>		P
A.1	General		P
A.2	Safety of lithium-ion secondary battery		P
A.3	Consideration on charging voltage		P
A.3.1	General		P
A.3.2	Upper limit charging voltage		P
A.3.2.1	General		P
A.3.2.2	Explanation of safety viewpoint		P
A.3.2.3	Safety requirements, when different upper limit charging voltage is applied	The upper limit charging voltage is 4,2V for component cell in specification.	P
A.4	Consideration of temperature and charging current		P
A.4.1	General		P
A.4.2	Recommended temperature range		P
A.4.2.1	General		P

IEC 62133: 2012			
条款	要求 - 试验	结果-评述	判定

A.4.2.2	Safety consideration when a different recommended temperature range is applied		N/A
A.4.3	High temperature range		N/A
A.4.3.1	General		N/A
A.4.3.2	Explanation of safety viewpoint		N/A
A.4.3.3	Safety considerations when specifying charging conditions in high temperature range		N/A
	Safety consideration when specifying new upper limit in high temperature range		N/A
A.4.4	Low temperature range		N/A
A.4.4.1	General		N/A
A.4.4.2	Explanation of safety viewpoint		N/A
A.4.4.3	Safety considerations, when specifying charging conditions in low temperature range		N/A
A.4.4.4	Safety considerations when specifying a new lower limit in the low temperature range		N/A
A.4.5	Scope of the application of charging current		P
A.5	Sample preparation	No applicable for battery.	N/A
A.5.1	General		N/A
A.5.2	Insertion procedure for nickel particle to generate internal short		N/A
	The insertion procedure carried out at 20°C±5°C and under -25 °C of dew point		N/A
A.5.3	Disassembly of charged cell		N/A
A.5.4	Shape of nickel particle		N/A
A.5.5	Insertion of nickel particle to cylindrical cell		N/A
A.5.5.1	Insertion of nickel particle to winding core		N/A
A.5.5.2	Mark the position of nickel particle on the both end of winding core of the separator		N/A
A.5.6	Insertion of nickel particle to prismatic cell		N/A

7.2.1	TABLE: Continuous low rate charge (cells)		N/A
7.2.2	TABLE: Vibration		N/A
7.3.1	TABLE: Incorrect installation (cells)		N/A
7.3.2	TABLE: External short circuit		N/A
7.3.6	TABLE: Crush		N/A
7.3.8	TABLE: Overcharge		N/A
7.3.9	TABLE: Forced discharge (cells)		N/A

### 安全关键件清单

序号	关键件名称	型号	规格/材料	生产者(制造商)	生产厂	认证标准	备注
24V 锂电池组							
1	锂离子电池	18650	2500mAh 3.7V	卓能 SZN	卓能 SZN	IEC62133:2012(ED.2)	随机测试
2	保护板	30A 同口	BQW-1106-6S 30A	东阳兴 DYX	东阳兴 DYX	IEC62133:2012(ED.2)	随机测试
3	IC	过充 4.25V 过放 2.7V	MM3220 SOT-23-6	美之美	美之美	IEC62133:2012(ED.2)	随机测试
4	MOS管	IS:-15A	063N08 TO-263	中航	中航	IEC62133:2012(ED.2)	随机测试
5	导线	1.5mm <sup>2</sup> *2 两芯	RVV53	RV	RV	IEC62133:2012(ED.2)	随机测试
6	外壳	ABS	340*270*120 mm	卓越	卓越	IEC62133:2012(ED.2)	随机测试

8.2.1	TABLE: Continuous charging at constant voltage (cells)				p
Model	Recommended charging voltage V <sub>c</sub> , (Vdc)	Recommended charging current I <sub>rec</sub> , (mA)	OCV at start of test, (Vdc)	Results	
18650-c1#	4.2	1200	4.151	A	
18650-c2#	4.2	1200	4.149	A	
18650-c3#	4.2	1200	4.150	A	
18650-c4#	4.2	1200	4.152	A	
18650-c5#	4.2	1200	4.148	A	
<b>Supplementary information:</b>					
A - No fire or explosion					
B - Fire					
C - Explosion					
D - Other					

8.3.1	TABLE: External short circuit (cell)					p
Model	Ambient, (°C)	OCV at start of test, (Vdc)	Resistance of circuit, (mΩ)	Maximum case temperature, (°C)	Results	
<b>Samples charged at charging temperature upper limit</b>						
18650-c6#	24	4.182	80	102.6	A	
18650-c7#	24	4.173	77	94.3	A	
18650-c8#	24	4.186	80	98.2	A	
18650-c9#	24	4.177	81	106.7	A	
18650-c10#	24	4.179	79	100.5	A	
<b>Samples charged at charging temperature lower limit</b>						
18650-c11#	24	4.152	79	87.5	A	
18650-c12#	24	4.143	80	93.2	A	
18650-c13#	24	4.159	78	94.7	A	
18650-c14#	24	4.162	80	90.8	A	
18650-c15#	24	4.160	80	98.6	A	
<b>Supplementary information:</b>						
A - No fire or explosion						
B - Fire						
C - Explosion						
D - Other						

8.3.2	TABLE: External short circuit (battery)					P
Model	Ambient, (°C)	OCV at start of test, (Vdc)	Resistance of circuit, (mΩ)	Maximum case temperature, (°C)	Results	
<b>Samples charged at charging temperature upper limit</b>						
NPP-24V60AH 1440Wh -b4#	55	25.155	80	58.2	A	

NPP-24V60AH 1440Wh -b5#	55	25.146	79	57.8	A
NPP-24V60AH 1440Wh -b6#	55	25.152	81	58.0	A
NPP-24V60AH 1440Wh -b7#	55	25.148	80	57.7	A
NPP-24V60AH 1440Wh -b8#	55	25.152	80	58.3	A
<b>Samples charged at charging temperature lower limit</b>					
NPP-24V60AH 1440Wh -b9#-	55	25.150	81	58.1	A
NPP-24V60AH 1440Wh -b10#	55	25.141	80	57.9	A
NPP-24V60AH 1440Wh -b11#	55	25.151	80	58.3	A
NPP-24V60AH 1440Wh -b12#	55	25.150	78	58.0	A
NPP-24V60AH 1440Wh -b13#	55	25.150	79	57.7	A
<b>Supplementary information:</b>					
A - No fire or explosion					
B - Fire					
C - Explosion					
D - Other					

8.3.5	TABLE: Crush					P
Model	OCV at start of test, (Vdc)	OCV at removal of crushing force, (Vdc)	Width/ diameter of cell before crush, (mm)	Required deformation for crush, (mm)	Results	
<b>Samples charged at charging temperature upper limit</b>						
18650-c29#	4.152	4.152	-	-	A	
18650-c30#	4.149	4.149	-	-	A	
18650-c31#	4.147	4.147	-	-	A	
18650-c32#	4.150	4.150	-	-	A	
18650-c33#	4.152	4.152	-	-	A	
<b>Samples charged at charging temperature lower limit</b>						
18650-c34#	4.153	4.153	-	-	A	
18650-c35#	4.150	4.150	-	-	A	
18650-c36#	4.147	4.147	-	-	A	



18650-c37#	4.149	4.149	13079	-	A
18650-c38#	4.149	4.149	13107	-	A
<b>Supplementary information:</b> A - No fire or explosion B - Fire C - Explosion D - Other					

<b>8.3.6</b>	<b>TABLE: Over-charging of battery</b>				<b>P</b>
<b>Constant charging current (A) .....</b>			<b>120</b>	<b>—</b>	
<b>Supply voltage (Vdc) .....</b>			<b>30</b>	<b>—</b>	
<b>Model</b>	<b>OCV before charging, (Vdc)</b>	<b>Resistance of circuit, (<math>\Omega</math>)</b>	<b>Maximum outer casing temperature, (<math>^{\circ}\text{C}</math>)</b>	<b>Results</b>	
NPP-24V60AH 1440Wh -b17#	18.247	-	25.5	A	
NPP-24V60AH 1440Wh -b18#	18.230	-	25.8	A	
NPP-24V60AH 1440Wh -b19#	18.225	-	25.2	A	
NPP-24V60AH 1440Wh -b20#	18.231	-	25.6	A	
NPP-24V60AH 1440Wh -b21#	18.224	-	26.0	A	
<b>Supplementary information:</b> A - No fire or explosion B - Fire C - Explosion D - Other					

<b>8.3.7</b>	<b>TABLE: Forced discharge (cells)</b>				<b>P</b>
<b>Model</b>	<b>OCV before application of reverse charge, (Vdc)</b>	<b>Measured Reverse charge <math>I_t</math>, (A)</b>	<b>Time for reversed charge, (minutes)</b>	<b>Results</b>	
18650-c39#	3.235	2.5	90	A	
18650-c40#	3.240	2.5	90	A	
18650-c41#	3.238	2.5	90	A	
18650-c42#	3.234	2.5	90	A	
18650-c43#	3.236	2.5	90	A	

**Supplementary information:**  
 A - No fire or explosion  
 B - Fire  
 C - Explosion  
 D - Other

8.3.9	TABLE: Forced internal short circuit (cells)					N/A
Model	Chamber ambient, (°C)	OCV at start of test, (Vdc)	Particle location <sup>1)</sup>	Maximum applied pressure, (N)	Results	
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<b>Supplementary information:</b>						

### 主要试验仪器设备清单

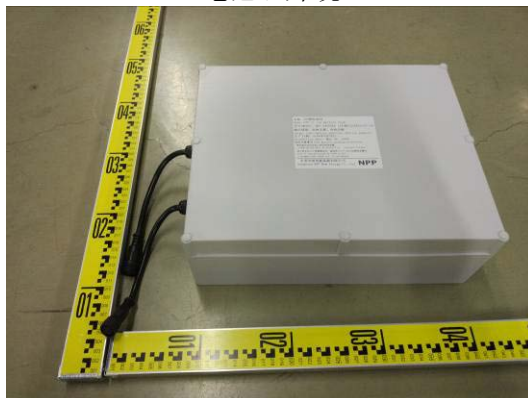
序号	名称	型号	设备编号	校准有效期	本次使用(√)
1	二次电池性能检测装置	BS-9300R	WKNC-0116	2018.01.09~2019.01.08	√
		HT-V60C50D50-2	VGDS-0173	2018.03.17~2019.03.16	√
2	压力真空表	-	DC-000084	2018.03.06~2018.09.05	
3	高低温试验箱	WD4005	N-0080	2018.03.19~2019.03.19	√
4	图表记录仪	GL220	VG DY-0322	2018.05.03~2019.05.02	√
5	电动振动台系统	ACT2000-S20L	WKNC-0059	2017.10.14~2018.10.13	
6	200 公斤冲击台	Y52200-1/ZF	WKLA-0031	2017.08.12~2018.08.11	
7	数字万用表	187	DC-000013	2017.11.26~2018.11.26	√
8	电子秒表	SW8091	DCG-3C	2017.06.13~2018.06.12	√
9	钢卷尺	5m	DCG-2C	2017.12.06~2018.12.05	√
10	温湿度记录仪	JZ1-2B	IB5-0011	2017.11.12~2018.11.11	√
11	跌落试验机	-	WKNB-0068	2017.08.28~2018.08.27	√
12	电池洗涤试验箱	HY-DCXD-31	VGDS-0201	2017.09.08~2018.09.07	
13	防爆温度速变湿热试验箱	KWGD6025IIIA	VGDS-0091	2017.09.04~2018.09.03	√
14	防爆型程式快速温度试验箱	HG-T-P-225K	WKNE-0115	2018.03.11~2019.03.10	√
15	Power supply	EA-PS 9080-510 3U	VGDS-0369	2018.11.03~2019.11.02	√
16	直流稳压稳流电源	WYK-3060	WKDF-0098	2018.01.03~2019.01.02	√
17	电脑智能遥控短路器	H-120A	DC-000042	2017.11.20~2018.11.19	√
18	电子负载	IT8512	VG DY-0167	2017.09.05~2018.09.04	
19	电池燃烧试验机 (美制铝网罩)	-	VGDS-0371	2017.09.18~2018.09.17	
20	静电枪	NSG438	NA-0091	2017.12.16~2018.12.15	
21	电池挤压试验机	YH-6104YSA	VGDS-0364	2018.05.04~2019.05.03	√
22	UL 落球冲击试验机	BST-1	WKNB-0053	2018.01.13~2019.01.12	
23	电池保护版测试仪	BPA-T0103	VG DY-0562	2018.01.20~2019.01.19	

**Annex 1 Photo documentation for battery**

**附件一. 电池组照片**

Overview of battery

电池组外观



---End of Annex 1---

**Annex 2 Photo documentation for component cell**

**附件二. 组成电池照片**

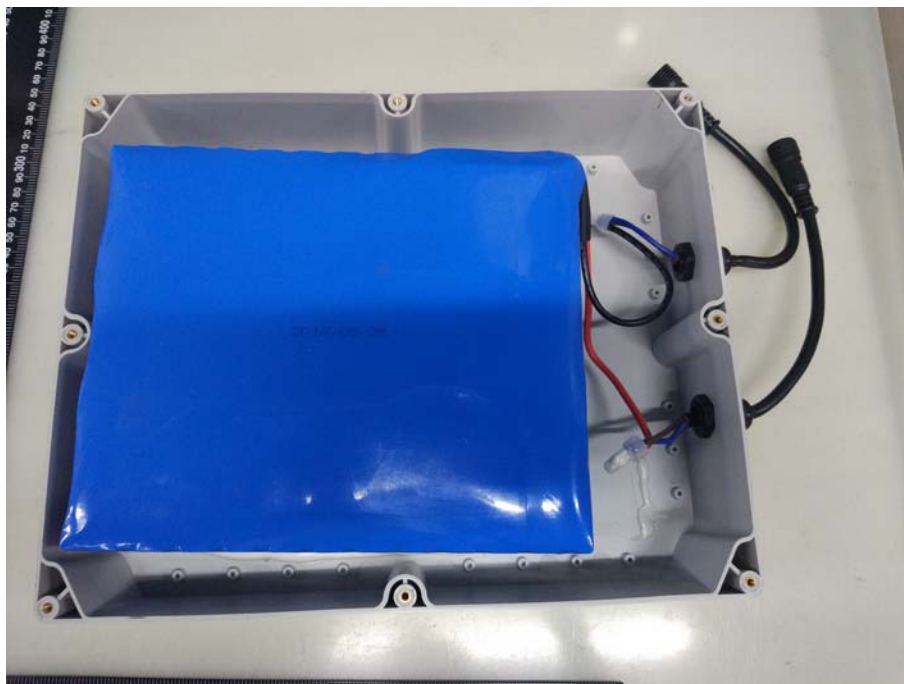
Overview of component cell

组成电池外观



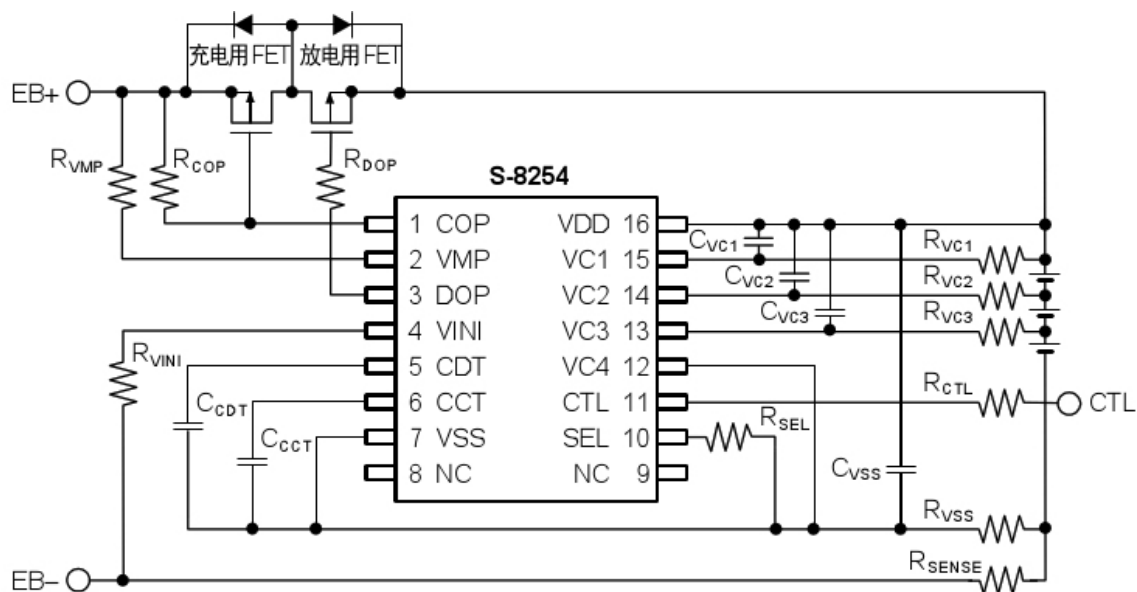
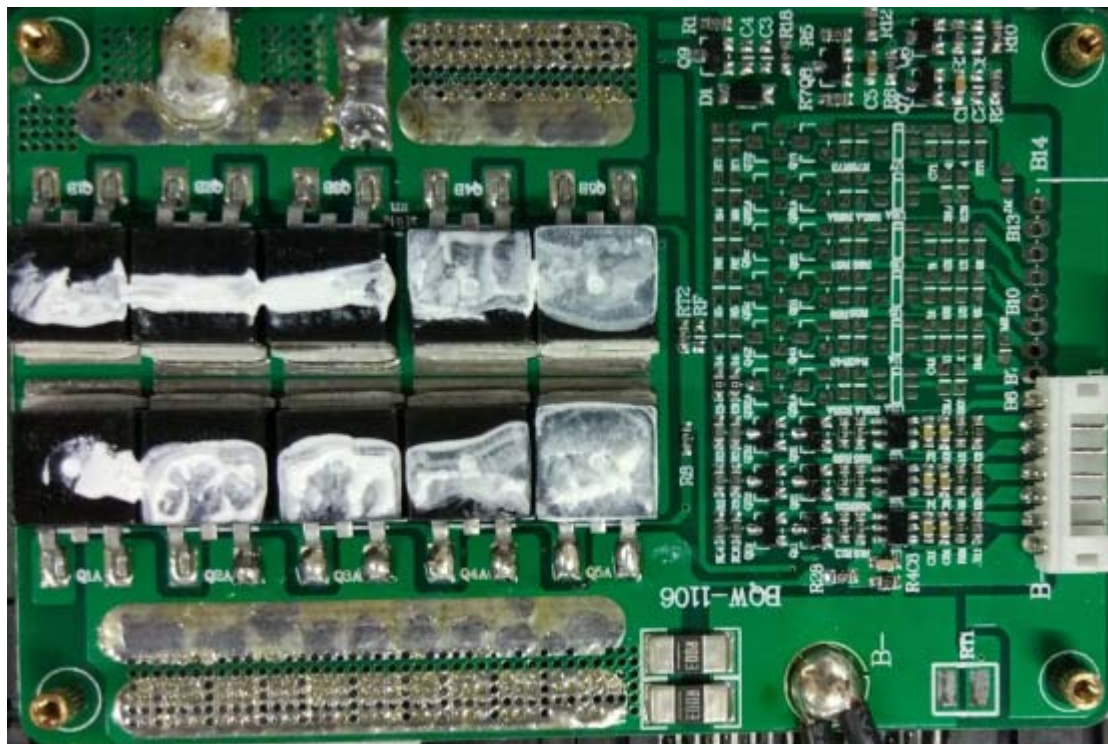
---End of Annex 2---

**Annex 3 Battery assembly**  
**附件三 电池组内部结构图**



---End of Annex 3---

**Annex 4 Protection circuit**  
**附件四. 保护板及电路图**



---End of Annex 4---

**Annex 5 Self-declaration Document**

**附件五 自我声明文件**



# 国际标准认证证书

兹证明

**东莞市耐普新能源有限公司**

注册地址: 东莞市虎门镇沙角社区凤凰西路南侧边A区3号5楼

经营地址: 东莞市虎门镇沙角社区凤凰西路南侧边A区3号5楼

其质量管理体系已通过中大国际认证的评审, 符合

**GB/T 19001-2016/ISO9001:2015标准**

认证范围

光伏组件(储能锂电池组, 太阳能组件)的组装生产

认证证书编号: ZD-2017Q0539  
组织机构(信用)代码: 91441900MA4X2X3C25  
本次证书发证日期: 2017年12月27日  
本次证书有效日期: 2018年12月26日



首次注册日期: 2017年12月27日

注册有效日期: 2020年12月26日

本证书由深圳中大国际认证有限公司颁发, 获证组织应于证书有效期内按规定执行监督审核并更新本认证证书, 认证设备是否有效, 应登陆<http://www.cqc216.com> 查询。证书信息亦可向国家认证认可监督管理委员会官方网站 ([www.cqca.gov.cn](http://www.cqca.gov.cn)) 上查询。

地址: 中国·广东·深圳市宝安区新安街道建安一路鸿泰大厦3楼512室 邮编: 518101

---End of Annex 5---  
---End of Report---



# 声 明

本报告试验结果仅对受试样品有效

未经许可本报告不得部分复制

对本报告如有异议，请于收到报告之日起十五天内提出

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