BCTC 倍测检测

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检测
TESTING
CNAS L6046

UN38.3 检 测 报 告

TEST REPORT

报 告 编 号: Report No.	BCTC2307296374B
委 托 单 位: Applicant	宁波维科新能源科技有限公司 Ningbo Veken New Energy Technology Co., Ltd.
产 品 名 称: Product Name	锂离子电池组 Lithium-ion Battery Pack
产 品 型 号: Product Model	VK-48V15Ah-J-13S3P
检 测 日 期: Test Date	2023-07-25至2023-08-07
签 发 日 期: Issued Date	2023-08-09

深 圳 市 倍 测 检 测 有 限 公 司

Shenzhen BCTC Testing Co., Ltd.

Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria (ST/SG/AC.10/11/Rev.7/Amend.1, 38.3)

联合国《关于危险货物运输的建议书 试验和标准手册》第七版修订 1, 38.3 章节

Client Information 客户信息	
Applicant 委托单位	Ningbo Veken New Energy Technology Co., Ltd. 宁波维科新能源科技有限公司
Applicant Address 委托单位地址	North Plant 1, Building 1, No.3, Gangxi Avenue, Western Bonded Zone, Ningbo, Zhejiang 浙江省宁波保税西区港西大道 3 号 1 幢-1 北侧厂房
Trade Mark 商标	/
Manufacturer 制造商	Ningbo Veken New Energy Technology Co., Ltd. 宁波维科新能源科技有限公司
Manufacturer Address 制造商地址	North Plant 1, Building 1, No.3, Gangxi Avenue, Western Bonded Zone, Ningbo, Zhejiang 浙江省宁波保税西区港西大道 3 号 1 幢-1 北侧厂房
Factory 生产厂	Ningbo Veken New Energy Technology Co., Ltd. 宁波维科新能源科技有限公司
Factory Address 生产厂地址	No.27, Weiwu Road, Veken Industrial Park, Xiaogang, Beilun District, Ningbo City, Zhejiang Province 浙江省宁波市北仑区小港维科工业园纬五路 27 号
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Website 公司网址	http://www.vekenner.com/
Sample Information 样品信息	
Name of Sample 样品名称	Lithium-ion Battery Pack 锂离子电池组
Model 型号	VK-48V15Ah-J-13S3P
Ratings 规格	15.0Ah, 720Wh
Appearance 外观	Black 黑色
Sample Size 样品尺寸	370.6*109.7*87.9mm 长度*宽度*厚度
Internal Cell Model 内部电芯型号	INR21700-50G
Internal Cell Ratings 内部电芯规格	3.63V, 4900mAh, 17.79Wh
Test Sample No. 测试样品编号	电池/Battery: 230756347-B01~B16;电芯/Cell: 230756346-C01~C30

Test Items 测试项目			
Clause 章 节	Name of Test Items 测试项目名称	Conclusion 结 论	Remarks 备 注
38.3.4.1 T.1	Altitude simulation 高度模拟	Pass 通过	--
38.3.4.2 T.2	Thermal test 温度试验	Pass 通过	--
38.3.4.3 T.3	Vibration 振动	Pass 通过	--
38.3.4.4 T.4	Shock 冲击	Pass 通过	--
38.3.4.5 T.5	External Short- circuit 外部短路	Pass 通过	--
38.3.4.6 T.6	☒ Impact 撞击 ☐ Crush 挤压	Pass 通过	Cylindrical cells greater than or equal to 18 mm in diameter 直径大于或等于 18mm 的圆柱形电芯
38.3.4.7 T.7	Overcharge 过度充电	Pass 通过	--
38.3.4.8 T.8	Forced discharge 强制放电	Pass 通过	--

Remark 备注：
Testing sample condition code 测试样品状态代码：
① 1 cycle fully charged. 1 次循环之后完全充电； ② 25 cycle fully charged. 25 次循环之后完全充电；
③ 1 cycle fully discharged. 1 次循环之后完全放电； ④ 25 cycle fully discharged. 25 次循环之后完全放电；
⑤ 1 cycle 50% charged. 1 次循环之后充电 50%； ⑥ 25cycle 50% charged. 25 次循环之后充电 50%；

Test Conclusion 结论

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.7/Amend.1, 38.3.
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.7/ Amend.1, 38.3 标准要求。

Tested by: Jack Du 主检：杜伟伟 Title: Test engineer 职衔：测试工程师	杜伟伟 Jack . DU	Reviewed by: George Hou 审核：侯凯凯 Title: Project handler 职衔：项目工程师	侯凯凯 George Hou	Approved by: Andre Yu 批准：余平 Title: Supervisor 职衔：主管	余平 Andre Yu

T.1 Altitude Simulation 高度模拟

Test cells and batteries shall be stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature (20±5°C)

将电芯和电池在温度为20±5°C、大气压力不大于11.6kpa的环境中贮存不少于6h。

Acceptance criteria接受准则:

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.

无漏液、无泄气、无分解、无破裂以及无着火现象；电芯或电池测试后的开路电压不低于测试前开路电压的90%。

Sample No. 样品编号	Sample Condition 样品状态	Weight 质量(g)		Weight Loss 质量损失%	Voltage 电压(V)		Percentage of residual Voltage 残余电压%	Results 结果
		Before Test 测试前	After Test 测试后		Before Test 测试前	After Test 测试后		
B01	①	3616.1	3615.9	0.006	54.08	54.07	99.982	A, B
B02	①	3609.9	3609.9	0.000	54.06	54.06	100.000	A, B
B03	①	3611.7	3611.6	0.003	54.09	54.07	99.963	A, B
B04	①	3610.2	3610.2	0.000	54.06	54.06	100.000	A, B
--	--	--	--	--	--	--	--	--
B05	②	3613.1	3613.0	0.003	54.07	54.06	99.982	A, B
B06	②	3612.4	3612.4	0.000	54.08	54.07	99.982	A, B
B07	②	3610.3	3610.3	0.000	54.10	54.10	100.000	A, B
B08	②	3615.4	3615.3	0.003	54.06	54.06	100.000	A, B
--	--	--	--	--	--	--	--	--

Results/ 结果:

A - No leakage, No venting, No disassembly, No rupture, No fire. 无漏液、无泄气、无分解、无破裂、无着火。

B - Voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure.测试后电压不低于测试前电压的90%。

C - Others (please explain).其它。

T.2 Thermal test 温度试验

Test cells and batteries are to be stored for at least six hours at a test temperature equal to 72±2°C, followed by storage for at least six hours at a test temperature equal to -40±2°C. 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°C).

首先将样品放在72±2°C的环境中放置至少6个小时，然后放在-40±2°C的环境中放置至少6个小时。温度转换的最大间隔时间为30分钟。如此循环10次，最后将样品放在20±5°C的环境中静置24小时。

For large cells and batteries, The duration of exposure to the test temperature extremes should be at least 12 hours.

对于大电芯，在高温和低温中放置的时间最少12个小时。

Acceptance criteria 接受准则:

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.

无漏液、无泄气、无分解、无破裂以及无着火现象；电芯或电池测试后的开路电压不低于测试前开路电压的90%。

Sample No. 样品编号	Sample Condition 样品状态	Weight 质量(g)		Weight Loss 质量损失%	Voltage 电压(V)		Percentage of residual Voltage 残余电压%	Results 结果
		Before Test 测试前	After Test 测试后		Before Test 测试前	After Test 测试后		
B01	①	3615.9	3615.0	0.025	54.07	53.51	98.964	A, B
B02	①	3609.9	3609.1	0.022	54.06	53.49	98.946	A, B
B03	①	3611.6	3610.8	0.022	54.07	53.52	98.983	A, B
B04	①	3610.2	3609.5	0.019	54.06	53.49	98.946	A, B
--	--	--	--	--	--	--	--	--
B05	②	3613.0	3612.3	0.019	54.06	53.49	98.946	A, B
B06	②	3612.4	3611.6	0.022	54.07	53.52	98.983	A, B
B07	②	3610.3	3609.6	0.019	54.10	53.54	98.965	A, B
B08	②	3615.3	3614.4	0.025	54.06	53.48	98.927	A, B
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Results/ 结果:

A - No leakage, No venting, No disassembly, No rupture, No fire. 无漏液、无泄气、无分解、无破裂、无着火。

B - Voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. 测试后电压不低于测试前电压的90%。

C - Others (please explain).其它。

T.3 Vibration 振动

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 between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes. 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. /样品必须牢固地安装在振动台台面上。振动以正弦波形式，从7Hz增加至200Hz， 然后减少回到7Hz为一个循环，一个循环持续15分钟。对样品从三个互相垂直的方向上各进行3个小时12次的测试。每个振动方向必须是相互垂直的极性平面

For cells and small batteries对于电芯和小电池:

From 7 Hz a peak acceleration of 1 gn is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 8 gn occurs (approximately 50 Hz). A peak acceleration of 8 gn is then maintained until the frequency is increased to 200 Hz.

对数扫频为：从7Hz开始保持1gn的最大加速度直到频率为18Hz，然后将振幅保持在0.8mm (总偏移1.6 mm) 并增加频率直到最大加速度达到8gn (频率约为50Hz)，将最大加速度保持在8gn直到频率增加到200 Hz.

For large batteries对于大电池:

From 7 Hz to a peak acceleration of 1 gn is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 2 gn occurs (approximately 25 Hz). A peak acceleration of 2 gn is then maintained until the frequency is increased to 200 Hz.

对数扫频为：从7Hz开始保持1gn的最大加速度直到频率为18Hz，然后将振幅保持在0.8mm (总偏移1.6 mm) 并增加频率直到最大加速度达到2gn (频率约为25Hz)，将最大加速度保持在2gn直到频率增加到200Hz。

Acceptance criteria接受准则:

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.

无漏液、无泄气、无分解、无破裂以及无着火现象；电芯或电池测试后的开路电压不低于测试前开路电压的90%。

Sample No. 样品编号	Sample Condition 样品状态	Weight 质量(g)		Weight Loss 质量损失%	Voltage 电压(V)		Percentage of residual Voltage 残余电压%	Results 结果
		Before Test 测试前	After Test 测试后		Before Test 测试前	After Test 测试后		
B01	①	3615.0	3615.0	0.000	53.51	53.51	100.000	A, B
B02	①	3609.1	3609.0	0.003	53.49	53.49	100.000	A, B
B03	①	3610.8	3610.8	0.000	53.52	53.51	99.981	A, B
B04	①	3609.5	3609.4	0.003	53.49	53.47	99.963	A, B
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B05	②	3612.3	3612.3	0.000	53.49	53.49	100.000	A, B
B06	②	3611.6	3611.5	0.003	53.52	53.51	99.981	A, B
B07	②	3609.6	3609.6	0.000	53.54	53.53	99.981	A, B
B08	②	3614.4	3614.4	0.000	53.48	53.48	100.000	A, B
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Results/ 结果:

A - No leakage, No venting, No disassembly, No rupture, No fire. 无漏液、无泄气、无分解、无破裂、无着火。

B - Voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. 测试后电压不低于测试前电压的90%。

C - Others (please explain).其它。

T.4 Shock 冲击

Test cells and batteries shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery. Each cell shall be subjected to a half-sine shock of peak acceleration of 150 gn and pulse duration of 6 milliseconds. Alternatively, large cells may be subjected to a half-sine shock of peak acceleration of 50 gn and pulse duration of 11 milliseconds. Each battery shall be subjected to a half-sine shock of peak acceleration depending on the mass of the battery. The pulse duration shall be 6 milliseconds for small batteries and 11 milliseconds for large batteries. The formulas below are provided to calculate the appropriate minimum peak accelerations.

以稳固的托架固定住每个电池/电芯样品，每个样品应该经受峰值加速度为150gn以及脉冲持续时间为6ms的半正弦冲击，另外，大型电池/电芯应该经受峰值加速度为50gn以及脉冲持续时间为11ms的半正弦冲击.每一个电池将受到一个半正弦冲击的峰值加速度取决于电池的质量。对于小型电池，脉冲持续时间为6毫秒，对于大型电池，脉冲时间为11毫秒。下面提供的公式用来计算适当的最小峰值加速度。

Battery	Minimum peak acceleration	Pulse duration
Small batteries	150 g_n or result of formula $Acceleration(g_n) = \sqrt{\left(\frac{100850}{mass^a}\right)}$ whichever is smaller	6 ms
Large batteries	50 g_n or result of formula $Acceleration(g_n) = \sqrt{\left(\frac{30000}{mass^a}\right)}$ whichever is smaller	11 ms

[a] Mass is expressed in kilograms.

Each sample was 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 for a total of 18 shocks.

每个测试样品须在三个互相垂直的电池安装方位的正方向经受三次冲击，接着在反方向经受三次冲击，总共经受18次冲击。

Acceptance criteria接受准则:

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.

无漏液、无泄气、无分解、无破裂以及无着火现象；电芯或电池测试后的开路电压不低于测试前开路电压的90%。

Sample No. 样品编号	Sample Condition 样品状态	Weight 质量(g)		Weight Loss 质量损失%	Voltage 电压(V)		Percentage of residual Voltage 残余电压%	Results 结果
		Before Test 测试前	After Test 测试后		Before Test 测试前	After Test 测试后		
B01	①	3615.0	3615.0	0.000	53.51	53.51	100.000	A, B
B02	①	3609.0	3609.0	0.000	53.49	53.47	99.963	A, B
B03	①	3610.8	3610.8	0.000	53.51	53.51	100.000	A, B
B04	①	3609.4	3609.3	0.003	53.47	53.47	100.000	A, B
--	--	--	--	--	--	--	--	--
B05	②	3612.3	3612.2	0.003	53.49	53.48	99.981	A, B
B06	②	3611.5	3611.5	0.000	53.51	53.51	100.000	A, B
B07	②	3609.6	3609.5	0.003	53.53	53.53	100.000	A, B
B08	②	3614.4	3614.4	0.000	53.48	53.47	99.981	A, B
--	--	--	--	--	--	--	--	--

Results/ 结果:

A - No leakage, No venting, No disassembly, No rupture, No fire. 无漏液、无泄气、无分解、无破裂、无着火。

B - Voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. 测试后电压不低于测试前电压的90%。

C - Others (please explain).其它。

T.5 External short circuit 外部短路

The samples were shall be heated for a period of time noted below, to reach a homogeneous stabilized temperature of 57 ± 4°C, measured on the external case:
为使样品达到均匀稳定的初始温度：57 ± 4°C，样品需在此环境下暴露一段时间。

☒ Small cells and small batteries: 6 hours. 小电芯和小电池至少暴露6小时。
☐ Large cells and large batteries: 12 hours.大电芯和大电池至少暴露12小时。
☐ _____hours, assessed depended on the size and design of the sample. _____小时，根据样品尺寸设计评估所得。

The samples were then subjected to a short circuit condition with a total external resistance of less than 0.1 ohm, until:
然后将样品正负极用小于0.1欧姆的总电阻回路进行短路，直到：

For Small cells, small batteries and large cells小电芯，小电池和大电芯:
1 hour after the external case temperature of sample has returned to 57 ± 4°C.
样品外表温度恢复到57 ± 4° C之后保持短路状态1小时以上。
For Large batteries大电池:
After the external case temperature of sample has decreased by half of the maximum temperature increase observed during the test and remains below that value.
样品表面温度下降所测最大温升的一半，并保持低于该数值。

Acceptance criteria接受准则:
The external temperature does not exceed 170°C, and there is no disassembly, no rupture and no fire during the test and within six hours after the test.
电池表面温度不超过170℃，测试中和结束后6h内观察样品无分解、无破裂、无着火现象发生。

Sample No. 样品编号	Sample Condition 样品状态	Voltage Before Test 测试前电压(V)	Maximum Temperature 最高温度（℃）	Results 结果
B01	①	53.51	56.9	A, B
B02	①	53.47	56.8	A, B
B03	①	53.51	57.0	A, B
B04	①	53.47	57.1	A, B
--	--	--	--	--
B05	②	53.48	57.6	A, B
B06	②	53.51	57.5	A, B
B07	②	53.53	57.8	A, B
B08	②	53.47	57.6	A, B
--	--	--	--	--

Results/ 结果:
A - No disassembly, No rupture, No fire during the test and within six hours after the test.. 测试中和结束后6h内观察样品无分解、无破裂、无着火现象发生。
B - The external temperature does not exceed 170℃．电池表面温度未超过170℃ 。
C - Others (please explain).其它。

T.6 Impact 撞击 / Crush 挤压

☒ **Impact 撞击 (Applicable to cylindrical cells greater than or equal to 18 mm in diameter适用于直径大于或等于18mm的圆柱形电芯)**

The sample cell or component cell is to be placed on a flat smooth surface. A 15.8 mm±0.1mm diameter, at least 6 cm long, or the longest dimension of the cell, whichever is greater, Type 316 stainless steel bar is to be placed across the centre of the sample. A 9.1 kg±0.1 kg mass is to be dropped from a height of 61±2.5 cm at the intersection of the bar and sample in a controlled manner using a near frictionless, vertical sliding track or channel with minimal drag on the falling mass. The vertical track or channel used to guide the falling mass shall be oriented 90 degrees from the horizontal supporting surface. 将样品放在一个平坦的光滑平面上。将一直径为15.8 mm±0.1mm.长度不小于6cm的316不锈钢棒横过样品中部放置后，将一质量为9.1 kg±0.1 kg的重物从61±2.5 cm的高度落向样品

The test sample is to be impacted with its longitudinal axis parallel to the flat surface and perpendicular to the longitudinal axis of the 15.8 mm±0.1mm diameter curved surface lying across the centre of the test sample. Each sample is to be subjected to only a single impact.接受撞击的样品，纵轴应与平坦的表面平行并与横放在样品中心的直径15.8 mm±0.1mm弯曲表面的纵轴垂直。每一个样品只接受一次撞击。

☐ **Crush 挤压 (Applicable to prismatic, pouch, coin/button cells and cylindrical cells not more than 18 mm in diameter适用于棱柱形、袋状、硬币/纽扣电芯和直径不超过18mm的圆柱形电芯)**

A cell or component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5 cm/s at the first point of contact. The crushing is to be continued until the first of the three options below is reached. 将样品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：

(a) The applied force reaches 13kN±0.78kN; /施加力达到13kN±0.78kN

(b) The voltage of the cell drops by at least 100 mV; /样品的电压下降至少100mV

(c) The cell is deformed by 50% or more of its original thickness. /电池变形达原始厚度的50%以上。

A prismatic or pouch cell shall be crushed by applying the force to the widest side. A button/coin cell shall be crushed by applying the force on its flat surfaces. For cylindrical cells, the crush force shall be applied perpendicular to the longitudinal axis. 棱柱形或袋状电芯应从最宽的一面施压。纽扣/硬币形电芯应从其平坦表面施压。圆柱形应从与纵轴垂直的方向施压。

Each test cell or component cell is to be subjected to one crush only. The test sample shall be observed for a further 6 h. The test shall be conducted using test cells or component cells that have not previously been subjected to other tests.每个样品都是全新样品，并且只经受一次施压。施压结束后样品应静置观察6小时。

Acceptance criteria接受准则

The external temperature does not exceed 170°C, and there is no disassembly, no rupture and no fire during the test and within six hours after the test.

电池表面温度不超过170℃，测试中和结束后6h内观察样品无分解、无破裂、无着火现象发生。

Sample No. 样品编号	Sample Condition 样品状态	Voltage Before Test 测试前电压（V）	Maximum Temperature 最高温度（℃）	Results 结果
C01	⑤	3.691	22.8	A, B
C02	⑤	3.687	22.6	A, B
C03	⑤	3.685	23.0	A, B
C04	⑤	3.690	22.7	A, B
C05	⑤	3.683	22.9	A, B
C06	⑥	3.685	22.6	A, B
C07	⑥	3.681	22.8	A, B
C08	⑥	3.688	22.7	A, B
C09	⑥	3.685	22.9	A, B
C10	⑥	3.683	23.1	A, B

Results/ 结果:

A - No disassembly, No rupture, No fire during the test and within six hours after the test.测试中和结束后6h内观察样品无分解、无破裂、无着火现象发生。

B - The external temperature does not exceed 170℃．电池表面温度未超过170℃。

C - Others (please explain).其它。

T.7 Overcharge 过度充电 (电芯不适用本项测试)

The charge current shall be twice the manufacturer's recommended maximum continuous charge current. Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours. The minimum voltage of the test shall be as follows:
在室温下，以 2 倍的制造商宣称的最大持续充电电流对样品充电，测试时间为 24 小时。测试的最小电压如下：
(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. /如果制造商宣称的充电电压不超过 18V，本测试的最小充电电压应是制造商宣称的最大充电电压的两倍或者是 22V 之中的较小者。
(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. /如果制造商宣称的充电电压超过 18V，本测试的最小充电电压应该是制造商宣称的最大充电电压的 1.2 倍。
Tests were conducted at ambient temperature 20 ± 5°C. The duration of the test was 24 hours.
测试在环境温度下进行，试验持续 24 小时。

Acceptance criteria 接受准则:

Rechargeable batteries meet this requirement if there is no disassembly and no fire during the test and within seven days after the test.
测试中和结束后 7 天内观察样品无解体、无起火现象发生。

Sample No. 样品编号	Condition 样品状态	Voltage of Before Test 测试前电压(V)	Overcharge current 过充电流(mA)	Overcharge voltage 过充电压(V)	Results 结果
B09	①	54.07	10000	65.52	A
B10	①	54.08			A
B11	①	54.06			A
B12	①	54.09			A
B13	②	54.05			A
B14	②	54.08			A
B15	②	54.06			A
B16	②	54.10			A

Results/ 结果:
A - No disassembly and no fire during the test and within seven days after the test. 测试中和结束后7天内观察样品无解体、无起火现象发生。
B - Others (please explain).其它。

T.8 Forced Discharge 强制放电

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.

在室温下，将单个电芯连接在12V的直流电源上进行强制放电，此直流电源供给每个电芯初始电流为制造商宣称的最大放电电流。

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).

指定的放电电流通过串联在测试电芯上的合适大小和功率的负载来获得，每个电芯的强制放电时间(小时)为额定容量除以初始电流(安培)。

Acceptance criteria接受准则:

Rechargeable batteries meet this requirement if there is no disassembly and no fire during the test and within seven days after the test.

测试中和结束后7天内观察样品无解体、无起火现象发生。

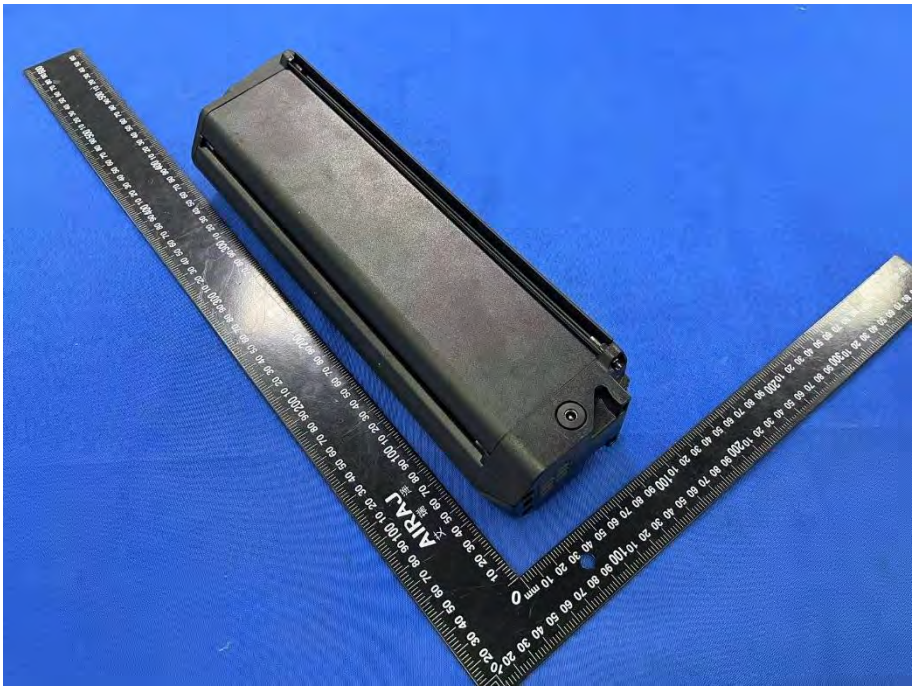
Sample No. 样品编号	Condition 样品状态	Initial Discharge Current 初始放电电流（mA）	Voltage Before Test 测试前电压(V)	Results 结果
C11	③	9800	3.065	A
C12	③		3.066	A
C13	③		3.067	A
C14	③		3.066	A
C15	③		3.068	A
C16	③		3.066	A
C17	③		3.064	A
C18	③		3.061	A
C19	③		3.063	A
C20	③		3.069	A
C21	④		3.068	A
C22	④		3.063	A
C23	④		3.062	A
C24	④		3.065	A
C25	④		3.061	A
C26	④		3.062	A
C27	④		3.064	A
C28	④		3.067	A
C29	④		3.065	A
C30	④		3.069	A

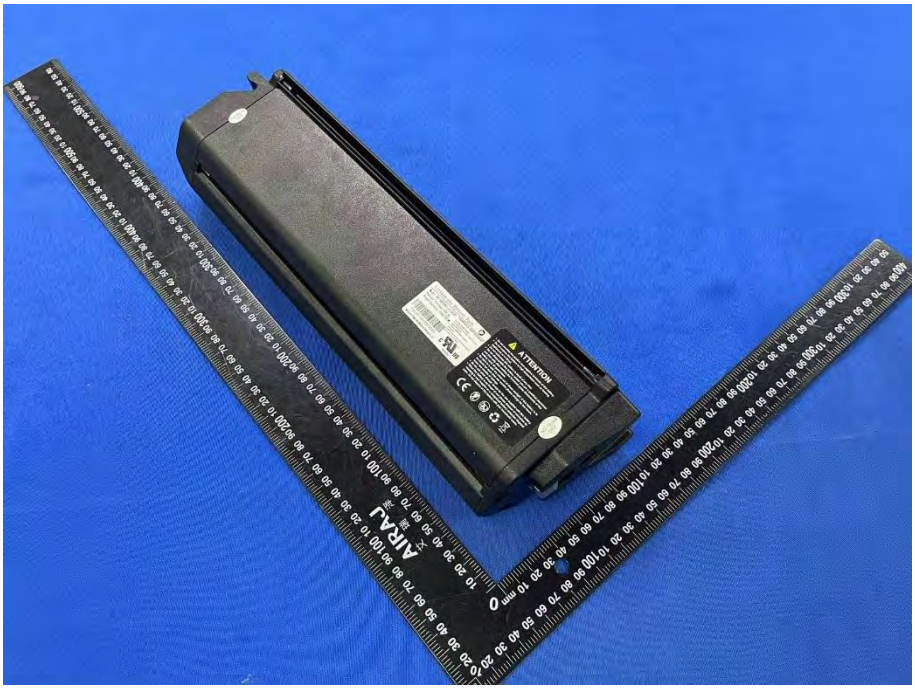
Results/ 结果:

A - No disassembly and no fire during the test and within seven days after the test. 测试中和结束后7天内观察样品无解体、无起火现象发生。

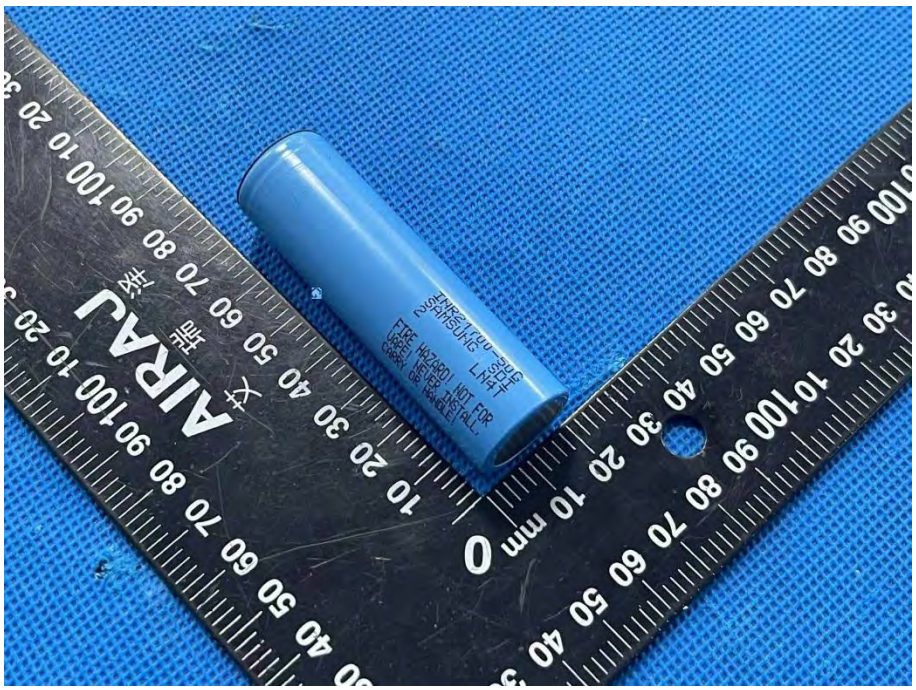
B - Others (please explain).其它。

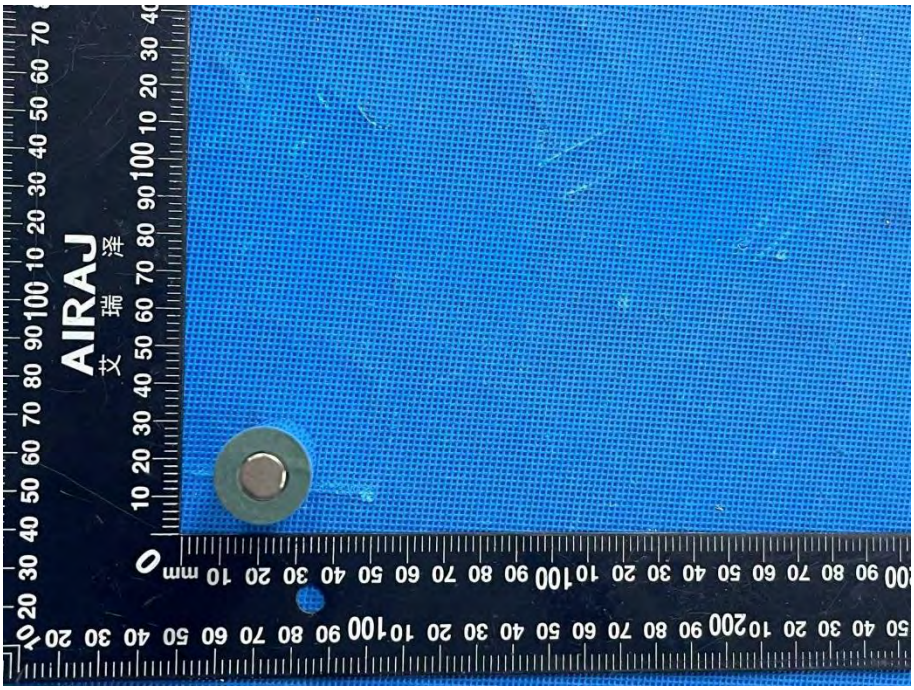
Test Sample
测试样品照片





Test Sample 测试样品照片





Label 标签


Lithium-ion Battery Pack
Model:VK-48V15Ah-J-13S3P
Nominal Voltage:48V dc
Rated Capacity:15Ah/720Wh
Code: 10010700004
FSSY01S8X7210001
Manufacturer:Ningbo Veken New Energy Techology Co.,Ltd
WARNING/A VERTISSEMENT
Use Only Orginal Charger
To reduce the risk of injury ,user must read instrution manual
Utilisez uniquement le chargeur d'oringine.
Pour prevenir les blessures,l'utilisateur doit lire le manuel d'utilisation
c US
MH66518

Equipment List 设备清单

No.序号	Name 名 称	Model 型 号	Series No.设备编号
1	电池低压高空模拟试验机 Altitude Simulation Tester	GX-3020-Z	BCTC-BAT-006
2	高性能电池检测系统 Battery Testing system	CT-4002-60V50A-NA	BCTC-BAT-005
3	可程式恒温恒湿试验箱 Temp & Humi. Chamber	GX-3000-80LT	BCTC-BAT-008
4	温控型短路试验机 Thermal Control Short Tester	GX-6055-B5	BCTC-BAT-015
5	电池冲击试验机 Battery Impact Tester	BE-5066	BCTC-BAT-020
6	交流内阻测试仪 Ac internal resistance tester	AT526	BCTC-BAT-024
7	电子天平 Electric Scale	TC20KB	BCTC-BAT-035
8	多路温度测试仪 Multichannel temperature tester	AT4516	BCTC-BAT-036
9	温湿度记录仪 temperature and humidity recorder	TH20R	BCTC-BAT-038
10	电子负载 direct-current load	IT8512A+	BCTC-BAT-039
11	电子负载 direct-current load	IT8512A+	BCTC-BAT-040
12	DC直流电源 DC direct-current	IT6502D	BCTC-BAT-042
13	数字万用表 Digital Multimeter	UT139C	BCTC-BAT-044
14	DC直流电源 DC direct-current	IT6502D	BCTC-BAT-043
15	数字万用表 Digital Multimeter	UT139C	BCTC-BAT-045
16	电磁式振动试验机 Electromagnetic Vibration Tester	EV2010H0606	BCTC-BAT-065
17	冲击试验机 Shock Tester	SKT100	BCTC-BAT-066

注：以上仪器设备均在计量校准周期内。

Remark: The above equipment are within the calibration cycle.

声 明

STATEMENT

1. 本次检测所用的测量设备的量值均可以溯源到国家计量标准。
The equipment lists are traceable to the national reference standards.
2. 检测报告未经本实验室书面批准，不得部分复制。
The test report can not be partially copied unless prior written approval is issued from our lab.
3. 检测报告未加盖“检测检测专用章”无效。
The test report is invalid without the "special seal for inspection and testing".
4. 检测报告无批准人员签字无效。
The test report is invalid without the signature of the approver.
5. 本次检测的结果仅对所检测样品有效。
The test process and test result is only related to the Unit Under Test.
6. 样品的相关信息由委托单位提供，实验室不对其真实性负责。
Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. 无 CMA 标志的检测报告，仅供科研、教学、企业产品研发及内部质量控制目的用。
The test report without CMA mark is only used for scientific research, teaching, enterprise product development and internal quality control purposes.
8. 本实验室的质量体系符合 ISO/IEC17025 标准的要求。
The quality system of our laboratory is in accordance with ISO/IEC17025.
9. 如对本检测报告有异议，可在收到检测报告后 15 天内向本单位申诉，逾期不予受理。
If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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※※※※※ **结束** ※※※※※

※※※※※ **END** ※※※※※