



# UN38.3 Test Report UN38.3 测试报告

**Client Name** 

委托单位。

Shenzhen Chief Power Electronics Co.,LTD

深圳市领芯源电子有限公司

, 203-20

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深圳市南山区西丽街道留仙大道平山一路云谷二期

8栋2楼203-205

**Product Name** 

产品名称

**Portable Power Station** 

便携式储能电源

**Report Date** 

报告日期

2024.09.20

Shenzhen Anbotek Compliance Laboratory Limited 深圳安博检测股份有限公司

深圳安博检测股份有限公司







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## 1. SAMPLE DESCRIPTION 样品描述:

1	1. SAMELL DL		<b>√ √</b> √ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑	No.	Por V.		10 18 L
		便	ortable Power Statio 携式储能电源	10.	Sample Model: 样品型号	anbotek	Anbotek
i i	Manufacturer: 制造商	he.	nenzhen Chief Pow 圳市领芯源电子有际	D.I.	ics Co.,LTD	Aupolek	Anbore
276	Address of manufacture 制造商地址	A <sup>ro</sup> Liu	03-205, 2nd Floor, E uxian Avenue, Xili S 圳市南山区西丽街边	Street, Nans	shan District, S	henzhen	ote, Vu
-	Factory: エ厂	000	angxi Chief Power T 西领芯源科技有限公	161	Co.,LTD	Anborek	Anbotek Anbotek
7	Address of factory: 工厂地址	nboleYie	3 Yishang Avenue, chun, Jiangxi Provi 西省宜春经济技术	nce work	Anbore	gical Developme	ent Zones,
P	Battery Nominal Voltage: 电池标称电压	12.8V (Built in Battery)	Rated Capacity 额定容量	<b>'</b>	000mAh Tra 0Wh 商	ademark: 标	Vupo tek
No.	Standard Charge Current: 标准充电电流	23.5V3/ (DC Input)	200		C Input) Vo	arge Limited Itage: 电限制电压	23.5V (DC Input)
0	Standard Discharge Current: 标准放电电流	12V <del></del> 10A (DC Outpu	V 1-0"	rent: (DC	C Output) off	scharge Cut- Voltage: 电终止电压	10V (Built in Battery)
0	Cells Number: 内含电芯个数	4 Anbotek	Cell Model: 电芯型号	25/	Ah Ca 电:	ll Rated pacity: 芯额定容量	25000mAh
00	Date of Sample Red 样品接收日期	ceived: 20	024.09.04	ik Au	potek Ant	Aupotek A	hotek
	Date of Test: 检测日期	Anbotek 20	024.09.04 ~ 2024.09	9.14	Anbotek	Aupolek	Anborek

Written by: 東健 <sup>編制</sup> Checked by: 审核

型水平

Approved by: 人 批准

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深圳安博检测股份有限公司

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## 2. REFERENCE METHOD 参考方法

UN "Manual of Tests and Criteria" Eighth revised edition ST/SG/AC.10/11/Rev.8/Subsection 38.3 联合国《试验和标准手册》第八修订版 38.3 节

### 3. EQUIPMENT LIST 设备清单

Up.	Sk spoon W. W. West Wall	401
, ore	Name of equipment /Model	Serial No.
AUPO	公田 口1/4 工 3	编号
	设备名称/型号 Altitude Simulation Testing Machine 植拟宫空低压试验箱	And
V.	模拟 高空低压 试验箱	SE-132
		, re
V	High Fast Temperature&Humidity Chamber	-Olek Vupo
rek	VOCE III A	SF-1488
upotek		Anbotek Anh
upore	Liectromagnetic vibration resting machine	SE-439
	电燃料振纫试验机	SE-439
Anbot	ole, Mu, ole up, K	Poler
	Shock Testing Machine 机械冲击台	SE-440
b.	7/1.77双子生 11 🖂	SE-440
6	HSK1-10	, , , , , , , , , , , , , , , , , , ,
		SE-4071
otek	IN COSE Y NOTE ATT	SE-7017
Anbotek	高温短路试验箱 KY-CS50 Battery Internal resistance 电池内阳测试仪	Anbotek Ar
Anbolo	Dattery internal resistance	SE-171
	生16月1177000000000000000000000000000000000	SE-17/60
Anbo	10	Anbolek
		SE-4360
Þ		oter 4300 Anbore
3/K	Dottory Charge And Discharge System	,,
V	Battery Charge And Discharge System 电池充放电系统 CT-4002-80V40A-NA	SE-1507
potek	OT 1000 001/104 114 01	DE-1307
	01 4002 00 4 40/1 14/1	Aupotek A
Anbotel	可担土革运中派	SE-4355
	IDCOOD 45 CO	OL TOOD
VUI	Clastronia landina	or 1502 Aupotek
	由子负载	SE-153/
	JT6111	SE-1537
.ek	TIVOL IVIO III UIUI III ELEI	V W
Yo.	公式 6 田宝	SE-2010
hotek	自取力用を MS8040 High-precision Electronic Counting Balance	V. KOK
2/6	High-precision Electronic Counting Balance	Anbotek
AUPO	High-precision Electronic Counting Balance 高精度电子计数天平	SE-1483
-	CHS-D And Alek Andore All Lok Model	And
VI	Data Acquisition/Swith Unit	SE-004
	Data Acquisition/Swith Unit 温升记录仪 34970A	
	温升记录仪 34970A	hotek Anbore

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# 4. ENVIRONMENTAL CONDITIONS OF THE TEST 环境条件

Temperature: (20±5) °C R.H.: (25~75) %RH

温度相对湿度

### 5. TEST ITEM AND CONCLUSION 测试项目及结论

ITEM MOTER AND OF	SAMPLE NUMBER	STANDARD	CONCLUSION
测试项目	样品编号	执行标准	结论
T1 Altitude simulation 高度模拟	Anbo. ok	otek Aupore	经测试,该样品符
TO The amount to at the 1881 1-4	ek Aupore, Yun	rek abote	合联合国《试验和
T2 Thermal test 热测试	ak abotek	Yupo, W.	标准手册》第八修 订版 38.3 节标准
T3 Vibration 振动	B1~B4, B5~B8	Anboren An	要求
T4 Shock 冲击	Anborek Anb	ST/SG/AC.10/1	The sample has
ek sporek Aup	hotek Anbore	1/Rev.8	passed the items
T5 External short circuit 外部短路	And above	K IVI COLIO	of UN "Manual of Tests and
T6 Crush 挤压	C1~C5, C6~C10	otek Anbore	Criteria" Eighth
T7 Oursels and 计序文中	DO DAO DAO DAO	ok abol	revised edition ST/SG/AC.10/11/
T7 Overcharge 过度充电	B9~B12, B13~B16	Aupor	Rev.8/Subsection
T8 Forced discharge 强制放电	C11~C20, C21~C30	anbolek Ar	38.3

Notes 说明:

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B1~B4: Small batteries at first cycle, in fully charged states; 为第 1 个充放电周期后完全充电状态的小型电池组;

B5~B8: Small batteries after 25 cycles ending in fully charged states;

为第25个充放电周期后完全充电状态的小型电池组;

B9~B12: Small batteries at first cycle, in fully charged states; 为第 1 个充放电周期完全充电状态的小型电池组;

B13~B16: Small batteries after 25 cycles ending in fully charged states;

为第25个充放电周期后完全充电状态的小型电池组;

C1~C5: Cells at first cycle at 50% of the design rated capacity; 为第 1 个充放电周期 50%设计额定容量状态的电池;

C6~C10: Cells at 25 cycle at 50% of the design rated capacity; 为第 25 个充放电周期 50%设计额定容量状态的电池;

C11~C20: Cells at first cycle in fully discharged states; 为第 1 个充放电周期完全放电状态的电池;

C21~C30: Cells after 25 cycles ending in fully discharged states. 为第 25 个充放电周期后完全放电状态的电池。

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### 6. TEST METHOD 测试方法

Tests T.1 to T.5 shall be conducted in sequence on the same cell or battery. Tests T.6 and T.8 shall be conducted using not otherwise tested cells or batteries. Test T.7 may be conducted using undamaged batteries previously used in Tests T.1 to T.5 for purposes of testing on cycled batteries. In order to quantify the mass loss, the following procedure is provided:

Mass loss(%) =  $(M_1-M_2) / M_1 \times 100$ 

Where M<sub>1</sub> is the mass before the test and M<sub>2</sub> is the mass after the test. When mass loss does not exceed the values in Table blow, it shall be considered as "no mass loss".

小型电池或电池组应按顺序进行试验 T.1 至 T.5。试验 T.6 和 T.8 应使用未另外试验过的电池或电池 组。试验 T.7 可以使用原先在试验 T.1 至 T.5 中使用过的未损坏电池组进行,以便测试经过充放电的电

质量损失的量化数值可用下式计算:

质量损失(%)= (M<sub>1</sub>-M<sub>2</sub>)/M<sub>1</sub> \*100

M<sub>1</sub> 是试验前的质量, M<sub>2</sub> 是试验后的质量。如质量损失不超过下表所列数值,

S	Mass M of cell or battery 电池或电池组质量 M	Mass loss limit 质量损失限值
16	M<1g	0.5%
n	1g≤M≤75g	0.2%
2	M>75g	0.1%

#### Test T.1 Altitude simulation

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  $\pm$  5°C).

Cells and batteries meet this requirement if there is 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.

试验 T.1 高度模拟

试验电池和电池组应在压力等于或低于 11.6 千帕和环境温度(20±5°C)下存放至少 6 小时。 如果无渗漏、无排气、无解体、无破裂和无起火,并且每个试验电池或电池组在试验后的开路电压 不小于其在进行这一试验前电压的90%,电池和电池组即符合这一要求。有关电压的要求不适用于完全 放电状态的试验电池和电池组。

#### Test T.2 Thermal test

Test cells and batteries are to be stored for at least six hours at a test temperature equal to  $72 \pm 2^{\circ}$ 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 until 10 total cycles are complete, after which all test cells and batteries are to be stored for 24 hours at ambient temperature (20 ± 5°C). For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12 hours.

Cells and batteries meet this requirement if there is 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.

试验 T.2 温度试验

试验电池和电池组应先在试验温度等于 72±2°C 的条件下存放至少 6 小时,接着再在试验温度等于· 40±2℃ 的条件下存放至少 6 小时。两个极端试验温度之间的最大时间间隔为 30 分钟。此程序重复进 行,完成 10 次,接着将所有试验电芯和电池在环境温度(20±5°C)下存放 24 小时。对于大型电池和电 池组,暴露于极端试验温度的时间至少应为12小时。

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如果无渗漏、无排气、无解体、无破裂和无起火,并且每个试验电池或电池组在试验后的开路电压不小于其在进行这一试验前电压的 90%,电池和电池组即符合这一要求。有关电压的要求不适用于完全放电状态的试验电池和电池组。

#### Test T.3 Vibration

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.

The logarithmic frequency sweep shall differ for cells and batteries with a gross mass of not more than 12 kg (cells and small batteries), and for batteries with a gross mass of more than 12 kg (large batteries).

For cells and small batteries: from 7 Hz a peak acceleration of 1  $g_n$  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  $g_n$  occurs (approximately 50 Hz). A peak acceleration of 8  $g_n$  is then maintained until the frequency is increased to 200 Hz.

For large batteries: 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  $g_n$  occurs (approximately 25 Hz). A peak acceleration of 2  $g_n$  is then maintained until the frequency is increased to 200 Hz.

Cells and batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire during the test and after the test and if the open circuit voltage of each test cell or battery directly after testing in its third perpendicular mounting position 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.

#### 试验 T.3 振动

电池和电池组紧固于振动机平台,但紧固程度不能造成电芯变形以致不能准确传递振动。振动应是正弦波形,对数频率扫描从 7 赫兹和 200 赫兹,再回到 7 赫兹,跨度为 15 分钟。这一振动过程须对三个相互垂直的电芯安装方位的每一方向重复进行 12 次,共为时 3 小时。其中一个振动方向必须与端面垂直

作对数式频率扫描,对总质量不足 **12** 千克的电池和电池组(电池和小型电池组),和对 **12** 千克及更大的电池组(大型电池组)应有所不同。

对电池和小型电池组;从 7 赫兹开始,保持 1  $g_n$  的最大加速度,直到频率达到 18 赫兹。然后将振幅保持在 0.8 毫米(总位移 1.6 毫米),并增加频率直到最大加速度达到 8  $g_n$ (频率约为 50 赫兹)。将最大加速度保持在 8  $g_n$  直到频率增加到 200 赫兹。

对大型电池组: 从 7 赫兹开始,保持 1  $g_n$  的最大加速度,直到频率达到 18 赫兹。然后将振幅保持在 0.8 毫米(总行程 1.6 毫米)并增加频率直到最大加速度达到 2  $g_n$ (频率约为 25 赫兹)。将最大加速度 保持在 2  $g_n$  直到频率增加到 200 赫兹。

如果试验中和试验后无渗漏、无排气、无解体、无破裂和无起火,并且每个试验电池或电池组在第三个垂直安装方位上的试验后立即测得的开路电压不小于在进行这一试验前电压的 90%,电池和电池组即符合本项要求。有关电压的要求不适用于完全放电状态的试验电池和电池组。

#### Test T.4 Shock

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  $g_n$  and pulse duration of 6 milliseconds. Alternatively, large cells may be subjected to a half-sine shock of peak acceleration of 50  $g_n$  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.

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V	V. 164	r 100 h
Battery 电池	Minimum peak acceleration 最小峰值加速度	Pulse duration 脉冲持续时间
Anbotek Anbot	150 g <sub>n</sub> or result of formula 150 g <sub>n</sub> 或公式计算	Anbotek Anbotek
Small batteries 小型电池组	Acceleration 加速度(g <sub>n</sub> )=√(100850/mass 质量 *)	6 ms 6 毫秒
W. Stok	whichever is smaller 取数值较少者	v hotek
polek Yupp	50 gո or result of formula 50 gո 或公式计算	otek Vupotek
Large batteries 大型电池组	Acceleration 加速度( $g_n$ )= $\sqrt{\frac{30000}{\text{mass 质量*}}}$	11 ms 11 毫秒
anbotek p	whichever is smaller 取数值较少者	Anboter And

<sup>\*</sup> Mass is expressed in kilograms 质量单位为千克

Each cell or battery shall be subjected to three shocks in the positive direction and to three shocks in the negative direction in each of three mutually perpendicular mounting positions of the cell or battery for a total of 18 shocks.

Cells and batteries meet this requirement if there is no 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. 试验 T.4 冲击

试验电池和电池组用坚固支架紧固在试验机上,支架支撑着每个试验电池的所有安装面。

每个电芯须经受最大加速度  $150 g_n$  和脉冲持续时间 6 毫秒的半正弦波冲击。不过,大型电池须经受最大加速度  $50 g_n$  和脉冲持续时间 11 毫秒的半正弦波冲击。

每个电池须经受的正弦波冲击的最大加速度取决于电池组的质量。小型电池组的脉冲持续时间6毫秒,大型电池组的脉冲持续时间11毫秒。以上公式用于计算合适的最低限度最大加速度。

每个电池或电池组须在三个相互垂直的电池或电池组安装方位的正极方向经受三次冲击,接着在负极方向经受三次冲击,总共经受 18 次冲击。

如果无渗漏、无排气、无解体、无破裂和无起火,并且每个试验电池或电池组在试验后的开路电压不小于其在进行这一试验前电压的 90%,电池和电池组即符合这一要求。有关电压的要求不适用于完全放电状态的试验电池和电池组。。

#### Test T.5 External short circuit

The cell or battery to be tested shall be shall be heated for a period of time necessary to reach a homogeneous stabilized temperature of 57±4°C, measured on the external case. This period of time depends on the size and design of the cell or battery and should be assessed and documented. If this assessment is not feasible, the exposure time shall be at least 6 hours for small cells and small batteries, and 12 hours for large cells and large batteries. Then the cell or battery at 57±4°C shall be subjected to one short circuit condition with a total external resistance of less than 0.1 ohm.

This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to 57±4°C, or in the case of the large batteries, has decreased by half of the maximum temperature increase observed during the test and remains below that value.

The short circuit and cooling down phases shall be conducted at least at ambient temperature.

Cells and batteries meet this requirement if their external temperature does not exceed 170°C and there is no disassembly, no rupture and no fire during the test and within six hours after the test. 试验 T.5 外部短路

对于待试电池或电池组,应加温一段必要的时间,使从外壳测量的温度达到均匀的稳定温度 57±4°C,这段时间的长短取决于电池或电池组的大小和设计,对于这个持续时间应加以评估和记录。如无法进行这种评估,则小型电池和小型电池组的暴露时间应至少6小时,大型电池和大型电池组的暴露时间应至少12小时。然后,电池或电池组应在57±4°C下经受总外电阻小于0.1 欧姆的短路条件。

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这一短路条件应在电池或电池组外壳温度回到 57±4°C 后继续至少 1 小时,或在大型电池组的情况下外壳温度降幅达试验中所观察的最高温升幅的二分之一并保持低于该数值。

短路和降温阶段应至少相当于环境温度。

如果外壳温度不超过 170°C,并且在试验过程中及试验后 6 小时内无解体、无破裂,无起火,电池和电池组即符合本项要求。

#### Test T.6 Impact / Crush

Test procedure - Impact (applicable to cylindrical cells not less than 18 mm in diameter)

The test sample cell or component cell is to be placed on a flat smooth surface. A 15.8 mm  $\pm$  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  $\pm$  0.1 kg mass is to be dropped from a height of 61  $\pm$  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.

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  $\pm$  0.1mm diameter curved surface lying across the centre of the test sample. Each sample is to be subjected to only a single impact.

Test procedure - Crush (applicable to prismatic, pouch, coin/button cells and cylindrical cells less than 18 mm 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 1.5 cm/s at the first point of contact. The crushing is to be continued until the first of the three options below is reached.

- (a) The applied force reaches 13 kN ± 0.78 kN;
- (b) The voltage of the cell drops by at least 100 mV; 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 100 mV or more, or the cell is deformed by at least 50% of its original thickness, the pressure shall be released.

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.

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.

Cells and component cells meet this requirement if their external temperature does not exceed 170°C and there is no disassembly and no fire during the test and within six hours after this test. 试验 T.6 撞击/挤压

试验程序一撞击(适用于直径不小于18毫米的圆柱形电池)

试样电池或原件电池放在平坦光滑的表面上,一根 316 型不锈钢棒横放在试样中心,钢棒直径 15.8 毫米 ±0.1 毫米,长度至少 6 厘米,或电池最长端的尺寸,取二者之长者。将一块 9.1 千克 ±0.1 千克 的重锤从 61 ±2.5 厘米高处跌落到钢棒和试样交叉处,使用一个几乎没有摩擦的、对落体重锤阻力最小的垂直轨道或管道加以控制。垂直轨道或管道用于引导落锤沿水平支撑表面呈 90 度落下。

接受撞击的试样,纵轴应与平坦表面平行并与横放在试样中心的直径 15.8 毫米 ± 0.1 毫米弯曲表面的纵轴垂直。每一试样只经受一次撞击。

试验程序一挤压(适用于棱柱形、袋装、硬币/纽扣电池和直径小于 18 毫米的圆柱形电池) 将电池或原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 1.5 厘米/秒。挤压持续进行,直到出现以下三种情况之一:

- (a) 施加的力量达到 13 千牛顿 ± 0.78 千牛顿;
- (b) 电池的电压下降至少 100 毫伏; 或
- (c) 电池变形达到原始厚度的 50%或以上。
- 一旦达到最大压力、电压下降 100 毫伏或更多,或电池变形至少达原厚度的 50%,即可解除压力。

棱柱形或袋装电池应从最宽的一面施压。纽扣/硬币形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。

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每个试样电池或原件电池只做一次挤压试验。试样应继续观察 6 小时。试验应使用之间未做过其他试验的电池或原件电池进行。

如果外壳温度不超过 170°C,并且在试验过程中及试验后 6 小时内无解体、无破裂,无起火,电池和电池组即符合本项要求。

#### Test T.7 Overcharge

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 during the test and within seven days after the test.

试验 T.7 过度充电

充电电流必须是制造商建议的最大持续充电电流的两倍。试验的最小电压如下:

- (a)制造商建议的充电电压不大于 18 伏时,试验的最小电压应是电池最大充电电压的两倍或 22 伏两者中的较小者;
  - (b) 制造商建议的充电电压大于 18 伏时,试验的最小电压应为最大充电电压的 1.2 倍。试验应在环境温度下进行,进行试验的时间应为 24 小时。
  - 可充电电池组在试验过程中和试验后7天内无解体,无起火,即符合本项要求。

#### Test T.8 Forced discharge

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 during the test and within seven days after the test.

试验 T.8 强制放电

每个电池应在环境温度下与 **12** 伏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。

将适当大小和额定值的电阻负荷与试验电池串联,计算得出给定的放电电流。对每个电池进行强制放电,放电时间(小时)应等于其额定容量除以初始试验电流(安培)。

原电池或可充电电池如在试验过程中和试验后7天内无解体,无起火,即符合本项要求。

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Hotline 400-003-0500 www.anbotek.com.cn



电话:(86)755-26066126

邮箱: service@anbotek.com



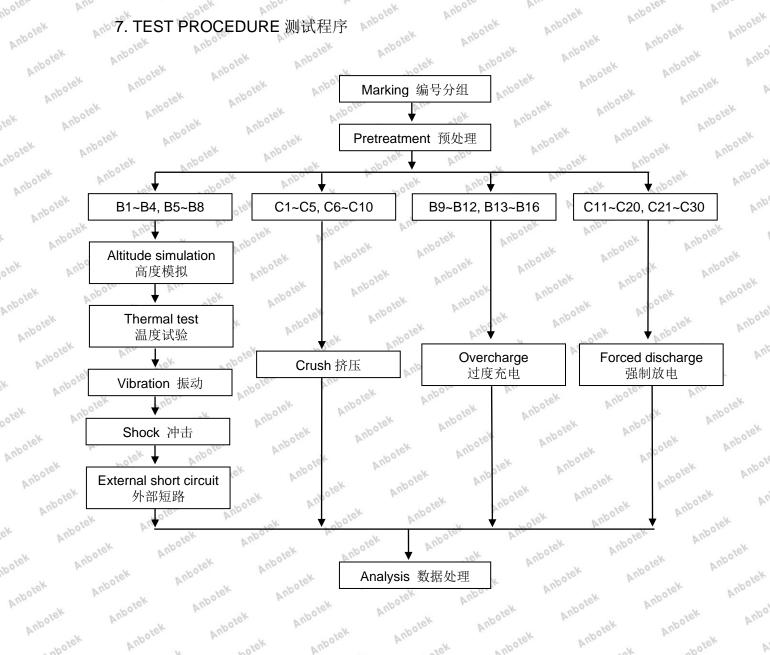
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### 7. TEST PROCEDURE 测试程序

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# 8. DATA 测试数据

#### T.1 Altitude simulation 高度模拟

	010			V 16/10		V		
Pre-test	Pre-test 测试前 After test		t 测试后	Mass	Voltage	upore, Yun		
Mass 质量 克(g)	Voltage 电压 伏(V) (USB-A)	Mass 质量 克(g)	Voltage 电压 伏(V)	loss 质量损失 (%)	ratio 电压比 (%)	Results 结果		
3932.27	5.153	3932.07	5.152	0.01	99.98	Pass 通过		
3933.23	5.146	3933.23	5.146	0.00	100.00	Pass 通过		
3932.62	× 5.147 🖟	3932.42	5.146	0.010010	99.98	Pass 通过		
3935.48	5.149	3935.48	5.148	0.00	99.98	Pass 通过		
3933.35	5.152	3933.15	5.152	0.01	100.00	Pass 通过		
3933.99	5.152	3933.99	5.152	0.00	100.00	Pass 通过		
3932.24	5.147	3932.04	5.146	0.01	99.98	Pass 通过		
3933.25	5.148	3933.25	5.148	0.00	100.00	Pass 通过		
	Mass 质量 克(g) 3932.27 3933.23 3932.62 3935.48 3933.35 3933.99 3932.24	Mass 质量 克(g)Voltage 电压 伏(V) (USB-A)3932.275.1533933.235.1463932.625.1473935.485.1493933.355.1523933.995.1523932.245.147	Mass 质量 克(g) Voltage 电压 伏(V) (USB-A) Mass 质量 克(g)   3932.27 5.153 3932.07   3933.23 5.146 3933.23   3932.62 5.147 3932.42   3935.48 5.149 3935.48   3933.35 5.152 3933.15   3933.99 5.152 3933.99   3932.24 5.147 3932.04	Mass 质量 克(g)     Voltage 电压 伏(V) (USB-A)     Mass 质量 克(g)     Voltage 电压 伏(V) (USB-A)       3932.27     5.153     3932.07     5.152       3933.23     5.146     3933.23     5.146       3932.62     5.147     3932.42     5.146       3935.48     5.149     3935.48     5.148       3933.35     5.152     3933.15     5.152       3933.99     5.152     3933.99     5.152       3932.24     5.147     3932.04     5.146	Mass 质量 克(g)     Voltage 电压 伏(V) (USB-A)     Mass 质量 克(g)     Voltage 电压 伏(V) (USB-A)     Mass 质量损失 (%)       3932.27     5.153     3932.07     5.152     0.01       3933.23     5.146     3933.23     5.146     0.00       3932.62     5.147     3932.42     5.146     0.01       3935.48     5.149     3935.48     5.148     0.00       3933.35     5.152     3933.15     5.152     0.01       3933.99     5.152     3933.99     5.152     0.00       3932.24     5.147     3932.04     5.146     0.01	Mass 质量 克(g)     Voltage 电压 伏(V) (USB-A)     Mass 质量 克(g)     Voltage 电压 伏(V) (USB-A)     Mass 质量 伏(V) (USB-A)     Voltage 电压 伏(V) (USB-A)     Mass 质量损失 (%)     Voltage 電压比 (%)       3932.27     5.153     3932.07     5.152     0.01     99.98       3933.23     5.146     3933.23     5.146     0.00     100.00       3932.62     5.147     3932.42     5.146     0.01     99.98       3935.48     5.149     3935.48     5.148     0.00     99.98       3933.35     5.152     3933.15     5.152     0.01     100.00       3933.99     5.152     3933.99     5.152     0.00     100.00       3932.24     5.147     3932.04     5.146     0.01     99.98		

Requirements 要求:

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After the test, there is no leakage, no venting, no disassembly, no rupture and no fire. And change ratio is not less than 90%. 测试后,样品无渗漏、无排气、无解体、无破裂和无起火。电压比不小于 90%。

#### T.2 Thermal test 热测试

Sample	Pre-test	测试前	After tes	st 测试后	Mass	Voltage	ok shotek
No. 样品编号	Mass 质量 克(g)	Voltage 电压 伏(V) (USB-A)	Mass 质量 克(g)	Voltage 电压 伏(V) (USB-A)	loss 质量亏损 (%)	ratio 电压比 (%)	Results 结果
B1	3932.07	5.152	3931.68	5.137	10.01 N	99.71	Pass 通过
B2 And	3933.23	5.146	3932.84	5.129	0.01	99.67	Pass 通过
, B3	3932.42	5.146	3932.03	5.129	0.01	99.67	Pass 通过
B4	3935.48	5.148	3934.69	5.127	0.02	99.59	Pass 通过
B5	3933.15	5.152	3932.36	5.134	0.02	99.65	Pass 通过
B6	3933.99	5.152	3932.81	5.130	0.03	99.57	Pass 通过
B7	3932.04	5.146	3931.25	5.128	0.02	99.65	Pass 通过
B8,1001	3933.25	5.148	3932.07	5.126	0.03	99.57	Pass 通过

Requirements 要求:

After the test, there is no leakage, no venting, no disassembly, no rupture and no fire. And change ratio is not less than 90%. 测试后,样品无渗漏、无排气、无解体、无破裂和无起火。电压比不小于 90%。

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# T.3 Vibration 振动

Sample	Pre-test	测试前	After tes	t 测试后	Mass	Voltage	abotek Dan Anbotek
No.	Mass	Voltage 电压	Mass	Voltage 电压	loss	ratio 🕟	Results
样品编号	质量 克(g)	伏(V)	质量 克(g)	伏(V)	质量亏损 (%)	电压比 (%)	结果
×	pote > L(9)	(USB-A)	74(9)	(USB-A)	0	You	abole Air
B1	3931.68	5.137	3931.48	5.136	0.01	99.98	Pass 通过
B2	3932.84	5.129	3932.84	5.129	0.00	100.00	Pass 通过
B3	3932.03	5.129	3931.83	5.129	0.01	100.00	Pass 通过
Anb B4	3934.69	× 5.127 📉	3934.69	5.126	0.0000000	99.98	Pass 通过
B5	3932.36	5.134	3932.16	5.134	0.01	100.00	Pass 通过
B6	3932.81	5.130	3932.81	5.129	0.00	99.98	Pass 通过
B7 <sup>Anb</sup>	3931.25	5.128	3931.25	5.128	0.00	100.00	Pass 通过
ø B8 №	3932.07	5.126	3931.87	5.125	0.01	99.98	Pass 通过

Requirements 要求:

After the test, there is no leakage, no venting, no disassembly, no rupture and no fire. And change ratio is not less than 90%. 测试后,样品无渗漏、无排气、无解体、无破裂和无起火。电压比不小于 90%。

### T.4 Shock 冲击

Sample	Pre-test 测试前		After test 测试后		Mass	Voltage	Auporen Au	
No. 样品编号	Mass 质量 克(g)	Voltage 电压 伏(V) (USB-A)	Mass 质量 克(g)	Voltage 电压 伏(V) (USB-A)	loss 质量亏损 (%)	ratio 电压比 (%)	Results 结果	
B1 ove	3931.48	5.136	3931.48	5.135	0.00	99.98	Pass 通过	
B2	3932.84	5.129	3932.84	5.129	6k 0.00 kg	100.00	Pass 通过	
B3 Anb	3931.83	5.129	3931.63	5.128	0.01	99.98	Pass 通过	
B4	3934.69	5.126	3934.69	5.126	0.00	100.00	Pass 通过	
B5	3932.16	5.134	3931.96	5.133	0.01	99.98	Pass 通过	
B6	3932.81	5.129	3932.81	5.129	0.00	100.00	Pass 通过	
B7 <sub>tek</sub>	3931.25	5.128	3931.05	5.128	0.01	100.00	Pass 通过	
B8	3931.87	5.125	3931.67	5.124	0.01	99.98	Pass 通过	

Requirements 要求: After the test, there is no leakage, no venting, no disassembly, no rupture and no fire. And change ratio is not less than 90%. 测试后,样品无渗漏、无排气、无解体、无破裂和无起火。电压比不小于 90%。

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# T.5 External short circuit 外部短路

100	1925	V	Part .	2/0	1/1.	
Sample No. 样品编号		Max. surface temperat 表面最高温度 (USB-A)			sults 果	otek An
Anbote B1	Ann	k abotek 57.9 And	, v	Pass	通过	16K
B2	Anbor	57.9	upoler	Pass	通过	Anbo
And B3	<i>Y</i> -	otek And 58.0	worek.	Anbore Pass	通过	apolek
B4°	b.	57.4	And	Pass	通过	, o'
AND B5 of	OOFER	Anbo 57.6.ek	Anboro	Pass	通过	VUR
Anbor B6	Nek	57.4	s abote	Pass	通过	ek A
<sub>anbotek</sub> B7	AUDO	57.3hbore	p.,	Pass	通过	No.
nte/B8	Anbore	57.4 <sub>nb</sub>	OFER PU	Pass	通过	100,

#### Requirements 要求:

Test sample exteral 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. 测试样品表面温度不超过 170°C,测试中与测试后 6 小时内无解体、无破裂、无起火。

#### T.6 Crush 挤压

Sample No. 样品编号	Max. surface temperature (°C) 表面最高温度	Results 结果
ATC1	botek And 24.4	Pass 通过
tek C2pole	23.9 And	Pass 通过
Links C3 Molek	Anbot 23.6	Pass 通过
Anbote C4 And	24.7	Pass 通过
atek C5 Anbore	23.8 potek And	Pass 通过
And C6	Anbot 23.7 Tel	Pass 通过
Anbo'C7 Ano	botek 24.0 Anbo	Pass 通过
C8 or	23.9	Pass 通过
oten AC9	And 23.6	Pass 通过
C10 over	24.1 Anbo	Pass 通过

#### Requirements 要求:

Test sample exteral 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. 测试样品表面温度不超过 170°C,测试中与测试后 6 小时内无解体、无破裂、无起火。

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# T.7 Overcharge 过度充电

100	" Ub	. V.	NO.	br.	The.	Villa
Samp 样品	e No. 编号	Aupore,	Aupotek	Results 结果	Anbotek	Anbotek
ntek B	9 Anbole.	Ann	abolek	Pass 通过	k hotek	Anbore
Anba B	1000 0	ek Aupor	V.	Pass 通过	Ve. Vue	ode. No.
cek AnbBi	1	tek abote	Aug.	Pass 通过	Polek Wup.	b.,
B'	2 tek Ar	100°	otek at	Pass 通过	u.	abotek A
B.	3 ,ek	anbotek An	-V	Pass 通过	Anbo	V. Otek
botek B	4.nb0	r. Olek	Anbore	Pass 通过	apolek	ANDO
Am B	5 anboter	Ann	botek	Pass 通过	V. Olek	Anbore.
Aupor B.	6 Grek	Anbore	VIII	Pass 通过	And	botek

#### Requirements 要求:

There is no disassembly and no fire during the test and within seven days after the test.样品在测试中和 测试后7天内无解体、无起火。

### T.8 Forced discharge 强制放电

No.	-100	Pr.	010	011			1.00	- 4P
Sample No 样品编号	Anbotek	Aupotek	Aupo	Res 结	ults 果	P.L.	por	A. Anbore
C11	200	Tox VUD		Pass	通过炒	160	Ann	6 6
C12	P.11.	olek Aup	olop	Pass	通过	abotek	Aupor	Α.
C13ote	1	'up	polek	Pass	通过	Yek	Ant	ole.
C14	otek	Aupolon	D.	Pass	通过	AUD	4.	hotek
Anborek C15 An	, o.K	potek	Anbore	Pass	通过	Anbo	(6)	VIII
Lotel C16	Aupole	VII.	npoie	Pass	通过	6	botek	Aupore
C17	abole	Anbor	V V	otek Pass	通过	P	" LOK	nbok
And C18	b.,	rek Aupore	Vu.	Pass	通过	otek	Aupole	P-
C19	AUE		otek	Anb <sup>o</sup> Pass	通过	Yek	Anbore	St. VL
C20	ek	Anborek An	Yo.	Pass	通过	Aupolo		notek
C21		hotek	Anbore	Pass	通过	Anbotek	Vu	V
C22	ipote.	Ann	abolek	Pass	通过	W.	rek	Aupoter
C23	Anbotek	Anbor	b.	Pass		Vur	You	anbotek
Anbore C24		k apolek	Vupo,	Pass	通过。	3K	'upose,	10
C25	Anboy	P	ek Ar	pote Pass	通过	Yo.	abotek	Anbo
C26	20	DOICH ANDO.	40.	Pass	通过人	00.	h.	ek p
C27	V	"Otek A	Poton	Pass	通过	anbotek	AUG	v.
C28 vo	le.	Aug	botek	Pass	通过	-10	F 0.	polon
C29	"Olek	Aupolo	b.	Pass	通过	VUL		potek
Kupoten C30	'Ur	botek	Anbois	Pass	通过	Ant	010	VII.
_ v	1000	D.,		100	VUD		No.	200.

Requirements 要求:

Requirements 要求: There is no disassembly and no fire during the test and within seven days after the test.样品在测试中和 测试后7天内无解体、无起火。

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### 9. PHOTOS OF THE SAMPLE 样品照片 Anbotek

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#### Battery 电池





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#### **Portable Power Station** Model: CP300B Rated Capacity: 320Wh Battery Capacity: 12.8V, 25000mAh Input: DC10.8-23.5V=3A (60W Max) AC Output: 220V~50Hz, 300W ( Waveform: Pure Sine Wave ) USB-A Output: 5V=3A, 9V=2A, 12V=1.5A (18W Max) Type-C1 Output: 5V=3A, 9V=3A, 12V=2.5A, 15V=2A, 20V=1.5A (30W Max) Type-C2 Input and Output: 5V=9V=12V=15V=20V=3A (60W Max) Cigarette Lighter Output: 12V=10A (120W Max) Charge temperature: 32 to 104°F (0 to 40°C) YYMMDD Discharge temperature: 14 to 113°F (-10 to 45°C) MADE IN CHINA 2xDC Output: 12V=10A(120W Max) Total Power: 300W

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### DECLARATION

### 声明

 Test place Lab: Shenzhen Anbotek Compliance Laboratory Limited Address: 401, 402, Building A, Hourui No.3 Industrial Zone, No.2 Kaicheng Road, Hourui Community, Hangcheng Street, Baoan District, Shenzhen, Guangdong, China.

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