HIGHSTAR	PRODUCT SPECIFICATION	DOC NO.:	ISR18650-2500
		SHEET :	1 OF 19
		ECN NO. :	Q/KAGG705-2020

Specitification Approval Sheet(Cell)

产品规格确认书（电芯）

受控 07

Model: ISR18650-2500

型号: ISR18650-2500

Compiled By	Audited By	Approved By
吴辉		

Customer Approval	Signature	Date
	Company Name:	
	Company Stamp:	

UL认证 UL attestation　CB认证 CB attestation　RoHS attestation　REACH attestation

AMENDMENT RECORDS

（规格变更记录）

Revision No.	Description	Date	Remark

Contents
目录

1 Scope

This document describes the product specification of the lithium-ion rechargeable cells for power tools by JiangSu Highstar Battery Manufacturing Co.,LTD

适用范围

本规格书描述了江苏海四达电源股份有限公司生产的适用于电动工具用可充电锂离子电芯的产品性能指标。

2 Model: ISR18650-2500

型号： ISR18650-2500

3 Specification

产品规格

No.	Items（项目）	Specifications（规格）
1	Limited Charge Voltage 充电限制电压	4.2V±0.05V
2	Nominal Voltage 标称电压	3.7V
3	Rated Capacity 额定容量 （0.2C）	2500mAh
	Minimum Capacity最低容量 （0.2C)	2400mAh
4	Standard Charging Current 标准充电电流	1.25A
	Rapid Charging Current 快速充电电流	4A
5	Standard Discharging Current标准放电电流	0.5A
	Cycle life Test Current 循环寿命测试电流	20A
	Max.Discharging Continuous Current 最大持续放电电流	30A
6	Discharge End Voltage 放电终止电压	2.5V
7	Operating Temperature (Cell Surface temperature) 工作温度(电芯表面温度）	Charging： 0℃~50℃ （recommended recharge release<45℃） 充电：0℃~50℃（推荐再次充电温度<45℃）
		Discharging： -20℃~80℃ (must re-discharge release<60℃) 放电： -20℃~80℃（再次放电温度必须<60℃）
8	Storage Temperature 存储温度	1 month:-30℃~60℃ 1个月：-30℃~60℃(1*) 3 months:-30℃~45℃ 3个月：-30℃~45℃(1*) 1 year:-20℃~25℃ 1年：-20℃~25℃(1*)
9	Cell Weight 电芯重量	Approx. 44.0 g
10	AC Impedance 交流内阻	≤20 mΩ
11	Cell Dimension(for shipping state) 电芯尺寸（出货状态）	长度 Length： 65.1 mm±0.3 mm 直径 Diameter：≤18.5 mm

Note(1):The cell is kept as ex-factory status(30% of charge).

4 Performance Specification

性能指标

4.1 Standard test conditions

标准测试条件

Unless otherwise specified,all tests stated in this Product Specification are conducted at below conditions:

Temperature : 23℃±2 ℃

Relative Humidity : 65%±20%

Atmospheric Pressure: 86kPa～106kPa

除非特别说明，本规格书中所有测试均在以下环境条件下进行：

温度： 23℃±2℃

标准湿度： 65%± 20%

大气压力：86kPa～106kPa

4.2 Electrical characteristics

电性能

No.	Items（项目）	Test Methods and Conditions （测试方法和条件）	Criteria（标准）
1	Standard Charging Method 标准充电	Charging the cell with constant current at 1.25A and then with constant voltage at 4.2V till charge current declines to ≤50mA. 1.25A恒流充电至4.2V，再恒压 4.2V充电直至充电电流≤50mA。	Limited Charge Voltage=4.2V Charge Current =1.25A 充电限制电压=4.2V 充电电流=1.25A
2	Rapid Charging Method 快速充电	Charging the cell with constant current at 2.5A and then with constant voltage at 4.2V till charge current declines to ≤100mA. 4A恒流充电至4.2V，再恒压 4.2V充电直至充电电流≤100mA。	Limited Charge Voltage=4.2V Charge Current =4A 充电限制电压=4.2V 充电电流=4A
3	AC Impedance 交流内阻	Prior to charging, the cell shall be discharged at a constant current of 1.25A down to the end discharge voltage 2.5V. The cell should be stored at the temperature of 23℃±2℃ from 1h to 4h. Internal resistance is measured at AC 1KHz± 0.1kHz . 将电池以1.25A电流恒流放电至2.5V，将电池按标准充电方法充电后，在23℃±2℃的环境温度下放置1h～4h后，用频率为1.0kHz± 0.1kHz的交流内阻测试仪直接进行测量。	≤20mΩ

No.	Items（项目）	Test Methods and Conditions（测试方法和条件）	Criteria（标准）
4	Capacity 容量	(1) Prior to charging, the cell shall be discharged at a constant current of 0.5A down to the end voltage 2.5V, rest for 10 minutes. 充电前，电池以0.5A的恒流放电至终止电压2.5V，搁置10分钟。 (2)The capacity means the discharge capacity of the cell, which is measured with discharge current of 0.5A to 2.5V end voltage after standard charge and rest step from 0.5h to 1h. The above experiment repeat 3 times, until the discharge capacity meet the requirement for one time, then the test can be stopped. 该容量是指标准充电后，搁置0.5~1h后，0.5A放电至2.5V的放电容量。上述试验可以重复3次，当有一次单体电池的放电容量符合要求时，试验即可停止。	≥2400mAh
5	Discharge Rate Capabilities 倍率放电性能	(1) Prior to charging,the cell shall be discharged at a constant current of 1.25A down to end evoltage 2.5V,rest for 10 minutes. 充电前，电池应以1.25A恒流放电至终止电压2.5V，搁置10分钟。 (2) Discharge with the current of 0.5A,2.5A,10A,20A and 30A respectively after standard charge and rest from 0.5h to 1h，and record the discharge capacity. 标准充电后，搁置0.5~1h，分别以0.5A/2.5A/10A/20A/30A放电到2.5V，记录放电容量。	<table><tr><td>Item</td><td colspan="5">Discharge condition</td></tr><tr><td>Current</td><td>0.5A</td><td>2.5A</td><td>10A</td><td>20A</td><td>30A</td></tr><tr><td>Relative Capacity</td><td>100%</td><td>95%</td><td>96%</td><td>95%</td><td>90%</td></tr></table>
6	Cycle Life 循环寿命	Charge: The cell shall be charged in accordance with rapid Charging Method . rest for 30 minutes. Discharge: 20A discharge to 2.5V, one cycle is finished, then rest for 30 minutes. Then repeat above steps,when capacity is less than 70% of rated capacity two times in a row , test is end. 测试条件： 充电：按快速充电方法充完后搁置30分钟。 放电：20A放电到2.5V，完成一个循环，搁置30分钟。重复上述步骤。直至连续两次放电容量低于额定容量的70%，测试结束。	≥300cycles ≥300次

No.	Items（项目）	Test Methods and Conditions （试方法和条件）	Criteria（标准）
7	Self-discharge 自放电 (Ref.)	Voltage difference after corresponding days rest at 23 ± 2℃ 电池以出厂电压状态在23±2℃条件下搁置相应天数后的压差。	10days 10天：≤0.05V 30days 30天：≤0.08V 90days 90天：≤ 0.15V
8	High-Low Temperature Discharge Performance 高低温放电性能	Capacity comparison at each temperature, measured after 3 hours storage at environment with discharge constant current 20A and 2.0V cut-off after the standard charge at 25℃. 25℃下充电至截止电压，在测试温度下静置3小时，然后20A放电至2.0V并记录不同温度下的放电容量。	<table><tr><td>Item</td><td colspan="5">Discharge condition</td></tr><tr><td>Current</td><td>-20℃</td><td>-10℃</td><td>0℃</td><td>25℃</td><td>55℃</td></tr><tr><td>Relative Capacity</td><td>≥70%</td><td>≥80%</td><td>≥85%</td><td>100%</td><td>≥95%</td></tr></table>

4.3 Safety Performance
安全性能

4.3.1 Cell Safety Tests
电芯安全试验

No.	Items（项目）	Test Methods and Conditions （测试方法和条件）	Criteria（标准）
1	OverchargeTest 过充试验	Firstly, discharge to 2.5V with the current of 0.5A. Then charge at constant current of 12A to 10V until the cell explode or fire or the surface tempreture of the cell stabled(the changes of temperature less than 10℃ during 30 minutes). Once the cell meet one of the three conditions, the test can be stopped. 室温下0.5A放电至终止电压的单体电池用恒流稳压源以12A恒流、限压10V充电，直到单体电池爆炸、起火或电池表面温度稳定（30分钟内温差＜10℃），三个条件满足其中一个时可停止试验。	No Fire, No Explosion. 不起火，不爆炸

No.	Items（项目）	Test Methods and Conditions （测试方法和条件）	Criteria（标准）
2	Low Pressure Test 低气压试验	The full charged cells are to be stored for at least 6h at an vaccum environment with pressure of less than 11.6kPa, and temperature of 23℃±2℃. 在23℃±2℃的环境温度下，将充满电的电池在大气压≤11.6 kPa的真空环境中储存至少6h。	No Fire, No Explosion. 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. 电池应不起火，不爆炸，每个电池试验后的开路电压不小于其在进行测试前电压的90%
3	Heating Test 加热试验	The cells are fully charged with standard charging method, and put into oven with nature air or cycled air convected, heat cell by velocity of 5℃/min ±2℃/min to 130℃±2℃,and maintain for 10 minutes. 电池按标准充满电后放于自然或循环空气对流的恒温箱中，温度以5℃/分钟±2℃/分钟的速率升至130℃±2℃并保持30分钟。	No Fire, No Explosion. 不起火，不爆炸
4	Temperature Cycling Test 温度循环试验	The fully charged cells are placed in a test chamber and subjected to the following cycles: a) Raising the temperature to 72℃±2℃ and maintaining this temperature for at least 6 hours. b) Reducing the temperature to -40℃ ±2℃ within 30 minutes and maintaining this temperature for at least 6 hours. c) Repeating the sequence for a further 9 cycles. d) After the 10th cycle, storing the cells for 24 hours prior to examination, in the temperature of 23±2℃. 充满电的电池：72℃±2℃搁置至少6h；-40℃±2℃搁置至少6h，两个极端温度之间最大间隔时间为30分钟。循环10次后将电池于23±2℃下搁置24小时进行检测。	No Fire, No Explosion. 不起火，不爆炸

5	Short Test 短路试验	The fully charged cells are placed in a test chamber and subjected to the following cycles: short the positive and negative terminals with wire resistance of 80mΩ±20mΩ.Tests are to be conducted at 23℃ ±2℃, keep 24h or surface temperature decline to 20% of max. temperature,test is end. 充满电的电池置于 23℃ ±2℃ 环境下，用外部电阻为80mΩ±20mΩ的导线将每只电池短路。持续24h或外壳温度下降至最高温度的20%时，结束试验。	No Fire, No Explosion. 不起火、不爆炸
6	Forced Discharge Test 强制放电试验	The cell is discharged with standard discharging method. Inverse charge current =2.5A; time: ≥90minutes 按标准放电要求对电池放电，以2.5A反向充电，充电时间不低于90分钟。	No Fire, No Explosion. 不起火，不爆炸

4.3.2 Mechanical Tests
机械试验

No.	Items（项目）	Test Methods and Conditions （测试方法和条件）	Criteria（标准）
1	Vibration Test 振动试验	The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7Hz and 200Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be repeated 12 times in 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 is as follows: from 7Hz a peak acceleration of 1 gn is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8mm(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. 振动应是在正弦波形，频率在7和200赫兹之间摆动再回到7赫兹的对数扫频为时15分钟。这一振动过程须对三个互相垂直的电池安装方位的每一个方向都重复进行12次，总共为时3小时。其中一个振动方向必须与端面垂直。 对数扫频为：从7赫兹开始保持1gn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(总偏移1.6毫米)并增加频率直到最大加速度达到8gn(频率约为50赫兹)。将最大加速度保持在8gn直到频率增加到200赫兹。	No Fire, No Explosion. 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. 电池应不起火，不爆炸，每个电池试验后的开路电压不小于其在进行测试前电压的90%。
2	Shock Test 冲击测试	The full charged cell is fixed on shock table. Each cell shall be subjected to a half-sine shock of peak acceleration of 150 gn and pulse duration of 6 milliseconds. Each cell 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 for a total of 18 shocks. 将充满电的单体电池固定在夹具上，每个电池须经受最大加速度150gn和脉冲持续时间6毫秒的半正弦波冲击。每个电池须在三个互相垂直的电池或电池组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。	No Fire, No Explosion. 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. 电池应不起火，不爆炸，每个电池试验后的开路电压不小于其在进行测试前电压的90%。

No.	Items（项目）	Test Method and Conditions （测试方法和条件）	Criteria（指标）
3	Crush Test 挤压试验	A cell is crushed between two flat surfaces. The applied force is 13 kN±1kN by hydrocylinder. Once the maximum pressure has been obtained, or voltage decrese to 1/3 of nominal voltage sharply, or 10% of deformation has occurred compared to the initial dimension, the force is released. 电池在两个平面间承受挤压，由液压油缸施加13 kN±1kN的挤压力。一旦挤压力达到最大或电池电压锐减到电池电压的三分之一，或者电芯表面发生了10%的形变时，卸压。	No Fire, No Explosion. 不起火，不爆炸
4	Free Drop Test 自由跌落试验	The fully charged cell drops on the concrete ground from 1m height,total 3 times,to obtain the shock of random directions. After the test, the cell shall rest for a minimum of one hour and then a visual inspection shall be performed. 充满电的电池三次从1m高的地方跌落到混凝土地面，以此获得随机方向的冲击。试验结束后至少搁置1h后观察电池外观。	No Fire, No Explosion. 不起火，不爆炸

4.4 Visual inspection

外观检测

There shall be no such defect as scratch, flaw, crack, and leakage, which may adversely affect commercial value of the cell.

不允许有任何影响电芯性能的外观缺陷，诸如裂纹、裂缝、泄漏等。

5. Others

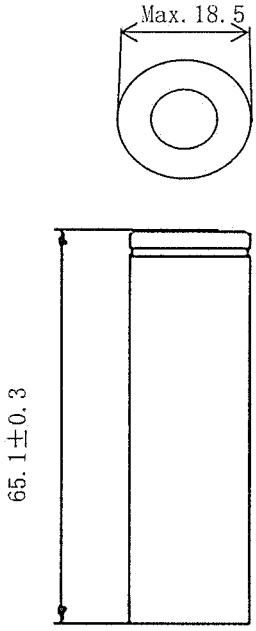
Any matters that this specification does not specify should be confirmed by the customer and HIGHSTAR.

其他事项

任何本规格书中未提及的事项，须经双方协商确定。

6. Cell Dimension(for shipping state)

电芯尺寸(出货状态)



单位:mm

7. Package

包装

The cells are packed with HIGHSTAR standard carton box, which hold two or four inner boxes. There are 100pcs 18650 cells per inner box. And each cell is held by a cardboard .

电芯使用 海四达标准的包装方式，每箱有2盒或4盒，每盒100pcs。每个电池相互隔开。

8 Limited Warranty and Liabilities

有限保证和责任

8.1 Warranty Period 质保期

The cells shall compile with this specification within 12 months from the manufacture date as stipulated on cell marking ("Warranty Period"). In the Warranty Period, HIGHSTAR will replace cells which fail to confirm to this specification at no cost to Customer.

自电芯标识显示的制造日期之日起12月内（"保证期限"），电芯应符合本规格书的规定。在此保证期限内，海四达免费为客户更换不符合本规格书规定的电芯。

8.2 Exclusion of Liability 免责

Under the following conditions, HIGHSTAR will not take any responsibility incurred in any losses resulting from the use of cells:

在以下条件下，海四达对客户因使用电芯而引起的任何损失不承担赔偿责任：

a. The cells are misused, abused or are used in any manner deviated or in breach of conditions as set out in this specification.

误用、滥用电芯或违反本规格书的规定使用电芯；

b. The cells are rendered to be nonconforming to this specification for reasons caused by parties other than HIGHSTAR or by circumstances beyond the control of HIGHSTAR.

非海四达原因导致的或海四达不能控制的原因导致的电芯不符合本规格书的规定。

8.3 Limited Warranty 有限保证

Customer is recommended to follow this specification to use. Or Customer can use an alternative operation method mutually agreed by Customer and HIGHSTAR. Using a operation method neither according to the specification nor agreed by HIGHSTAR in written will cause voiding of Limited Warranty.

推荐客户完全按照此产品规格书上所描述的要求进行操作，或采用经过客户与海四达双方确认的其他条件. 如果客户采用的操作方法既没有按照此规格书的要求，也没有经海四达同意，将导致产品质量保证不适用于此保质期限。

Warning Statement

WARNING

BATTERIES ARE POTENTIALLY DANGEROUS AND PROPER PRECAUTIONS MUST BE OBSERVED IN HANDLING AND MAINTENANCE.

RUNNING TESTS ON THE BATTERIES IMPROPERLY MAY RESULT IN SEVERE PERSONAL BODY INJURY OR PROPERTY DAMAGES.

WORK ON BATTERIES MUST BE PERFORMED ONLY WITH PROPER TOOLS AND PROTECTIVE EQUIPMENT MUST BE USED.

BATTERY MAINTENANCE MUST BE CARRIED OUT BY PERSONNEL KNOWLEDGEABLE OF BATTERIES AND TRAINED IN THE SAFETY PRECAUTIONS INVOLVED.

FAILURE TO OBSERVE THE ABOVE MAY CAUSE VARIOUS HAZARDS.

9 Handling Precautions and Notice 操作指示及注意事项

Statement (1):

Customers are requested to contact HIGHSTAR in advance, if and when the customer needs other applications or operating conditions than those described in this document. Additional experimentation may be required to verify performance and safety under such conditions.

声明一：

客户若需要将电芯用于超出文件规定以外的设备，或在文件规定以外的使用条件下使用电芯，应事先联系海四达，因为需要进行特定的实验测试以核实电芯在该使用条件下的性能及安全性。

Statement (2):

HIGHSTAR will take no responsibility for any accident when the cell is used under other conditions than those described in this Document.

声明二：

对于在超出文件规定以外的条件下使用电芯而造成的任何意外事故，海四达概不负责。

Statement (3):

HIGHSTAR will inform, in a written form, customers of improvement(s) regarding proper usage and handling of cells, if it is deemed necessary.

声明三：

如有必要，海四达会以书面形式告知客户有关正确操作使用电芯的改进措施。

Statement (4):

During designation of host device or battery pack, it's better for customers to get HIGHSTAR involve to review the battery installation and safety protection scheme. This is very helpful to safety of cell application.

声明四：

客户在产品设计过程中，最好邀请海四达共同完成电池安装及电池安全保护装置部分的设计，这对电池的安全使用会很有帮助。

9.1 Charging

充电

9.1.1 Charging current

Charge current should be less than the maximum value specified in the Product Specification. Charging with higher current than recommended value may cause damage to cells' electrical, mechanical, and safety performance and could lead to heat generation or leakage. If you have special needs, please contact with the company.

充电电流:

充电电流不得超过本标准书中规定的最大充电电流。使用高于推荐值电流充电将可能引起电芯的充放电性能、机械性能和安全性能的问题，并可能会导致发热或泄漏。如有特殊需要，请与公司联系沟通。

9.1.2 Charge Voltage

The charger and battery protection circuit of battery pack design maximum charge voltage limit of 4.25 V. It is very dangerous that charging with higher voltage than 4.2Vand may cause damage to the cell electrical, mechanical safety performance and could lead to heat generation or leakage.

充电电压:

充电器和电池保护电路设计的最高充电电压极限为4.25V，电芯电压高于4.2V时，将可能引起电芯的充放电性能、机械性能和安全性能的问题，可能会导致发热或泄漏。

9.1.3 Charge Temperature:

In case of environment temperature is lower than 10℃, batteries shall be charged with a little current (no larger than 0.5C). If the environment temperature is lower than 0℃, charge shall be prohibited.

充电温度:
环境温度低于10℃时，只能以小电流（不得大于0.5C）充电；当环境温度低于0℃时，应禁止充电。

9.1.4 Prohibition of Reverse Charge:

Reverse charging is prohibited. Cells shall be connected correctly. The polarity has to be confirmed before wiring. In case of the cell is connected improperly, the cell cannot be charged. the reverse charging may cause damage to the cell which may lead to degradation of cell performance and damage the cell safety, and could cause heat generation or leakage.

禁止反向充电:
正确连接电池的正负极，严禁反向充电。若电池正负极接反，应保证无法对电芯进行充电。反向充电会降低电芯的充放电性能、安全性，并会导致发热、泄漏。

9.2 Discharge
放电
9.2.1 Discharge Current:

The cell shall be discharged at less than the maximum discharge current specified in the Product Specification. High discharging current may reduce the discharge capacity significantly or cause over-heat.

放电电流:
放电电流不得超过本标准书规定的最大放电电流，大电流放电会导致电芯容量剧减并导致过热。
9.2.2 Discharge Temperature:

Cells shall be discharged at -20℃~60℃ environment temperature specified in the Product Specification

放电温度:

电芯必须在 -20℃~60℃ 的环境温度范围内进行放电。

9.2.3 Over-discharge:

It should be noted that cells would be at an over-discharged status due to self-discharge characteristics in case they were not used for a long time. In order to prevent over-discharging, cells shall be charged periodically . Over-discharging may cause the loss of cell performance, characteristics , or battery functions.

过放电:

需注意的是，在电芯长期未使用期间，它可能会因其自放电特性而处于某种过放电状态。为防止过放电的发生，电芯应定期充电。过放电会导致电芯性能、电池功能的丧失。

9. 3 Notices for Designing Battery Pack 电池组结构设计注意事项

9.3.1 Pack Design 外壳设计

Battery pack should have sufficient strength to make sure the cell(s) inside is protected from mechanical shock.

电池外壳应有足够的机械强度以保证其内部电芯免受机械损伤，材质为阻燃性材料。

9.3.2 Cell Fixing 电芯的安装

9.3.2.1 No cell movement in the battery pack should be allowed.

电芯不得在壳内活动。

9.3.2.2 Prevention of short circuit in a battery pack or host device.

防止电芯在电池包装或主机内产生短路。

Enough insulation layers between wiring and the cells shall be used to maintain extra safety protection. The battery pack or host device shall be structured with no any potential short circuit, which may cause generation of smoke or firing.

引线与电芯之间要有足够的绝缘层以保证绝对安全。电池壳内不得有任何短路发生隐患，以防止冒烟或着火。

9. 4 Storage

贮存

The cell shall be stored at the environmental condition of -20℃~40℃ and ≤70% RH.

The voltage for a long time storage shall be 3.5V-3.7V range.

If the cell has to be storied for a long time (Over 3 months), the environmental condition should be:

Temperature: -20℃~20℃； Humidity: ≤70% RH.

Recharge the cell which its voltage is less than 3.5V every 3 months during the warranty period. Charge current:400mA~2000mA.

电芯储存温度必须在 -20℃~40℃，湿度≤70%RH 的环境内。长期存储电池（超过3个月）须置于温度为-20℃~20℃、湿度为≤70% RH的环境中。长期贮存电压为3.5V~3.7V。保质期内每隔3个月对电池电压低于3.5V的电池用0.4A-2A电流进行补充电。

9.5 Cantions for Use and Handling:

使用操作注意事项:

9.5.1 The following information, or equivalent statements, shall be made available to the user through one or more of the following means, as appropriate: printed on the label for the battery, printed on the label for host device, printed in the owner's manual, or posted in a help file or Internet website:

下列信息或类似的申明必须通过一种或多种适当的途径让用户知晓，可选择的途径包括：电池标签、主机标签、用户手册、储存于帮助文档或互联网：

9.5.1.1 Do not disassemble or open, crush, bend or deform, puncture, or shred;

请勿拆解或打开、挤压、弯折、变形、刺穿、敲碎；

9.5.1.2 Do not modify or remanufacture, attempt to insert foreign objects into the battery, immerse or expose to water or other liquids, or expose to fire, explosion, or other hazard.

请勿修改或改装，不要试图将外物插入电池，不要浸入或暴露在水或其它液体中，远离火源、爆炸物和其他危险；

9.5.1.3 Only use the battery for the system for which it was specified.

只能使用本系统规定的电池；

9.5.1.4 Only use the battery with a charging system that has been qualified with the system per standard. Use of an unqualified battery or charger may present a risk of fire, explosion, leakage, or other hazard.
只能使用通过标准认证具有充电管理系统的电池，使用未经认证的电池或充电器可能存在起火、爆炸、或其它危险；
9.5.1.5 Do not let the same metal or other conductor contact the positive and the negative poles of the battery at the same time.
请勿让同一金属或其它导体同时接触电池正负极端子；

9.5.1.6 Replace the cell only with another cell that has been qualified with the system per standard. Use of an unqualified battery may present a risk of fire, explosion, leakage, or other hazard.

更换电池时只能使用通过标准认证的电池，使用未经认证的电池可能存在起火、爆炸、或其它危险；

9.5.1.7 Don't keep a cell at rest for a long time (over 6 months). Safety accident may happen when rechargingа battery which has a rest for a long time.

避免电池长时间放置不用，长期放置不用的电池重新充电时可能会发生安全问题。
9.5.1.8 Promptly dispose of used batteries in accordance with local regulations.
按当地法规迅速处理报废电池；

9.5.1.9 Cell usage by children should be supervised.
儿童使用电池应受到监督；

9.5.1.10 Avoid dropping the phone or cell. If the phone or cell is dropped, especially on a hard surface, and the user suspects damage, take it to a service center for inspection.

不要跌落主机或电池，如果主机或电池不慎跌落（尤其在硬表面上），用户怀疑电池损坏，则应找服务中心检查；
9.5.1.11 Improper cell use may result in a fire, explosion, or other hazard.
不正确使用电池可能发生燃烧、爆炸或其它危险。
9.5.1.12 In the event of a cell leak, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with large amounts of water and seek medical advice.

如果电池发生漏液，不要让电池接触皮肤和眼睛，如果接触不幸发生，则用大量的水冲洗接触部位或寻求医生帮助；

9.5.1.13 Seek medical advice immediately if a cell has been swallowed.
如果电池被吞食了，立即就医；

9.5.1.14 Communicate the appropriate steps to be taken if the hazard occurs.
告知用户如果危险发生，应采取什么步骤。
9.5.2 The following indications, notifications, and dialog/messages, at the system level, or an equivalent statement, may be displayed along with recommended actions as appropriate:
下列指示、通告、语句/信息或类似的申明应通过适当途径让用户知悉：
9.5.2.1 Abnormal cell temperature alert.
不正常的电池温度警示；
9.5.2.2 Abnormal host device and/or cell dc input voltage alert.
不正常的主机或电池的直流输入电压警示；
9.5.2.3 Abnormal current draw alert.
不正常的电流警示；

9.5.2.4 Cell communication fail/time-out alert.
电池通讯失败或超时警示；
9.5.2.5 Incompatible cell alert.
不相容电池警示；
9.5.2.6 Alert for other malfunctions that may lead to hazards.
可能导致危险的其它故障警示。

9.6 Others:
其它事项：
9.6.1 Prohibition of Disassembly
严禁拆卸电芯
9.6.1.1 Never disassemble cells. The disassembling may generate internal short circuit in the cell, which may cause firing or other problems.
在任何情况下不得拆卸电芯。拆卸电芯可能会导致内部短路，进而引起着火及其它问题。
9.6.1.2 Electrolyte is harmful. In case the electrolyte come into contact with the skin, or eyes, physicians shall flush the electrolyte immediately with fresh water and medical advice is to be sought.
电解液有害。万一有电解液泄漏而接触到皮肤、眼睛或身体其它部位，应立即用清水冲洗电解液并就医。
9.6.2 Never incinerate nor dispose the cells in fire. These may cause firing of the cells, which is very dangerous and is prohibited.
在任何情况下，不得燃烧电芯或将电芯投入火中，否则会引起电芯燃烧，这是非常危险的，应绝对禁止。
9.6.3 The cells shall never be soaked with liquids such as water, seawater, drinks such as soft drinks, juices, coffee or others.
不得将电芯浸泡液体，如淡水、海水、饮料（果汁、咖啡等）。
9.6.4 The cell replacement shall be done only by either cells supplier or device supplier and never be done by the user.
更换电芯应由电芯供应商或设备供应商完成，用户不得自行更换。
9.6.5 Prohibition of use of damaged cells.
禁止使用已损坏的电芯。

9.6.6 When charging, inflammables shall not be placed within one meter of the cells.
电芯充电时，在一米范围内不得放置易燃物。

9.6.7 The capacity of cells in the shipping and transportation process should be no more than 30% of fully charged state.
电芯出货与运输过程中带电量不超过30%。

9.6.8 The cells might be damaged during shipping by shock. If any abnormal features of the cells are found such as deformation of the cell package, smelling of an electrolyte, an electrolyte leakage and others, the cells shall never be used any more. The Cells with a smell of the electrolyte or a leakage shall be placed away from fire to avoid firing.
电芯在运输过程中可能因撞击等原因而损坏，若发现电芯有任何异常特征，如外壳破损，闻到电解液气味，电解液泄漏等，该电芯不得使用。有电解液泄漏或闻到异常味道的电池应远离火源以避免着火。

Customer Inquiry
客户调查

Model: ISR18650-2500

The customer is requested to write down your information and contact HIGHSTAR in advance, if and when the customer needs applications or operating conditions other than those described in this document. HIGHSTAR could design and build such products according to your special request.
我司也可以根据客户的特殊要求而设计、制造符合要求的产品，如果贵公司有本规格书描述之外的性能要求，请您写在下面并回签给我司：

	Special Request 要求	Criteria 规格
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Company Name: _____ Signature: _____ Date: _____