Li-Polymer Battery Specification

客户型号(Model)：IE-1065140

电压(Voltage)：3.7V

标称容量(Nominal Capacity)：10000mAh

组合方式(Assembled)：3.7V battery

版本(Revision): A-0

日期(Date): 2021-05-22

文件编码(File code): G2021052203

成品编码(Product Code):

客户(Customer):

PACK Registered/Date PACK编制/日期	PACK Checked/Date 审核/日期	Proj. Checked /Date 项目审核/日期
CELL Confirmation/Date 电芯确认/日期	CELL Checked/Date 审核/日期	Approved/Date 批准/日期

Customer Confirmation 客户确认	Date 日期

The Specification in Chinese and English respectively, if they have differences, the Chinese language version shall prevail。本规格书为中英文双语，如有分歧，则以中文版本为准。

Revisal record

规格书修订记录

REV. 版本	Date 日期	Contents 内容	Revised 修订人	Remarks 备注
A0	2021.05.22	First issue 初版发行		

1. Scope 适用范围

The specification shall be applied to IE-1065140 Li-Polymer Battery.

2. Specification 主要技术参数

No.	Items 项目	Criteria 标准	Remarks 备注
2.1	Typical capacity 典型容量	10000mAh	With a discharge current of $0.2C_5$ to the cut-off voltage 按 $0.2C_5$ 放电至终止电压 （Temperature 温度: 23℃±2℃）
	Minimum Capacity 最小容量	9500mAh	
2.2	Energy 能量	37Wh	
2.3	Nominal Voltage 标称电压	3.7V	
2.4	Outgoing Voltage 出货电压	≥3.80V	
2.5	Battery internal resistance 电池内阻	≤200mΩ	AC 1.0±0.1kHz test after standard charge 标准充电后交流 1.0±0.1kHz 测试 （Temperature温度: 23℃±2℃）
2.6	Limited charge voltage 充电限制电压	4.20V	
2.7	Standard charge current 标准充电电流	2000mA	
2.8	Maximum charge current 最大充电电流	5000mA	
2.9	Standard discharge current 标准放电电流	2000mA	
2.10	Max continuous discharge current 最大持续放电电流	5000mA	
2.12	Cut-off voltage 终止电压	2.5V	
2.13	Operating Temperature 工作温度	Charging 充电： 0~45℃	
		Discharging 放电：-40~55℃	
		Recommended operating temperature 推荐工作温度：15℃～35℃	
2.14	Storage Environment 储存环境	Less than 1 month 小于1个月：-10℃～40℃，75%RH Max	
		Less than 3 months 小于3个月：-5℃～35℃，75%RH Max	
		Recommended storage environment 推荐存储环境：15℃～35℃，75% RH Max	

Long time storage 长时间存储:

If the battery need be stored for a long time, the voltage should be 3.8~4.0V, and stored in the condition as storage proposal. It need at least one charge & discharge cycle every three months. 当电池需要长时间存储时，应将电压充至 3.8～4.0V，并放置在推荐的存储条件下。每 3 个月至少做一次完整的充放电循环。

3.Test Conditions 测试环境条件

3.1 Standard Test Conditions 标准测试条件

3.1.1 Unless otherwise specified, all performance tests is required conducted at temperature 23℃±2℃, Humidity less than 75% and atmospheric pressure 86~106 kPa.
除非有其它特殊说明外，所有的产品性能规格测试都在温度：23℃±2℃，相对湿度：不大于75%，大气压力：86~106 kPa的环境条件下进行。

3.1.2 Refer to the national standard of the People's Republic of China: GB/T 18287-2013
参考中华人民共和国国家标准：GB/T 18287-2013

3.1.3 Unless otherwise specified, the tested product is required unused within one month after outgoing.
除非有其它特殊说明外，所有的产品性能规格均以出厂日期1个月以内未使用的产品进行测试。

3.2 Standard Charge Mode 标准充电模式

"Standard Charge" means at 23±2℃ charge to limit voltage with 0.2I_tA constant current, then charge with constant voltage until current less than 0.02I_tA. 标准充电是指在23±2℃环境温度条件下以0.2I_tA恒流充电至充电限制电压，然后以恒压方式充电至充电电流小于0.02I_tA。

3.3 Quick Charge Mode 快速充电模式

" Quick Charge" means charge to limit voltage with 0.5I_tA constant current, then charge with constant voltage until current less than 0.02I_tA. 快速充电是指以0.5I_tA恒流充电至充电限制电压，然后以恒压方式充电至充电电流小于0.02I_tA。

3.4 Standard Discharge Mode 标准放电模式

"Standard Discharge" means at 23±2℃ discharge to the cut-off voltage with 0.2I_tA current. 标准放电是指在23±2℃环境温度条件下以0.2I_tA的电流将电池放电到终止电压。

3.5 Quick Discharge Mode 快速放电模式

"Quick Discharge" means discharge to the cut-off voltage with 0.5I_tA current. 快速放电是指以 0.5I_tA 的电流放电到终止电压。

3.6 Initial Capacity 初始容量

The standard charge mode for charging, then the standard discharge mode to discharge, measured for the first time the battery capacity is the initial capacity. 按标准充电模式进行充电，再以标准放电模式进行放电，在此方式下所测得的首次电池容量即为初始容量。

4. Product Performance 产品性能

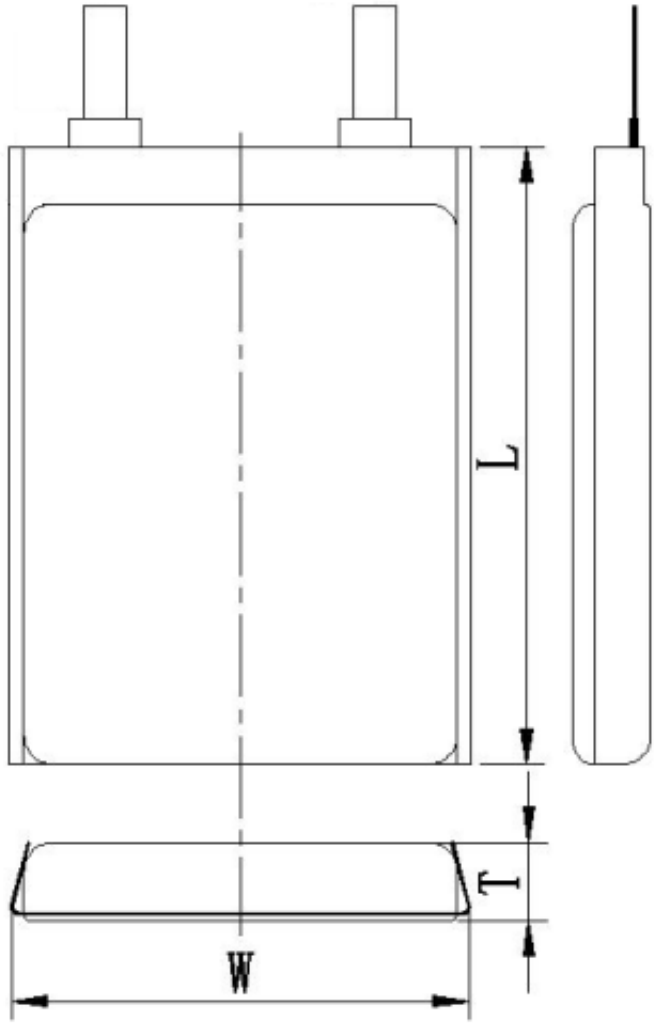
4.1 Product General Performance 产品的常规性能

No.	Items/项目	Testing method and criterion /测试方法和判定标准
1	0.2I_tA discharging Performance 0.2I_tA 放电性能	The cell or battery charged with standard charge mode, deposit 0.5~1h, then discharged with standard discharge mode. The discharge time is required≥5h. The above test cycle can be repeated five times, Once is qualified to meet the requirements. 将电池或电池组按标准充电模式充好电后，搁置0.5~1h，再以标准放电模式进行放电，放电时间应≥5h。上述测试可以重复循环5次，当有一次符合要求即为合格。
2	Quick discharging Performance 快速放电性能	The cell or battery charged with quick charge mode, deposit 0.5~1h, then discharged with quick discharge mode. The discharge capacity is no less than 90% of initial capacity. 将电池或电池组按快速充电模式充好电后，搁置0.5~1h，再以快速放电模式进行放电，放电容量应不小于初始容量的90% 。
3	Cycle life 循环寿命	At 23±2℃, during the test, every 50 cycles for a capacity check. the cell or battery life is expressed in multiples of 50.For every 50 times the process of test as follows: A：1~49 cycles: charge to limit voltage with 0.5I_tA constant current, then charge with constant voltage until current less than 0.1I_tA, deposit 0.5~1h, then discharged with quick discharge mode; B：50 cycles: charged with standard charge mode, deposit 0.5~1h, then discharged with standard discharge mode; Any one of the 50 cycles, if the discharge time of less than 3h, then repeat B one time accordance with the provisions of the 50th once again, if the discharge time is still less than 3h, the life is over. The cycle is required≥300 times. 在环境温度23±2℃条件下进行验试，试验过程中，每50次循环做一次容量检查，电池或电池组寿命以50的倍数表示，每50次的试验过程如下： A：第1-49次循环以0.5I_tA恒流充电至充电限制电压，然后以恒压方式充电至充电电流小于0.1I_tA,静置0.5～1h，再按快速放电模式进行放电； B：第50次循环以标准充电模式充电后静置0.5～1h，再以标准放电模式放电； 直至任一个第50次循环放电时间低于3小时，则按第50次循环的规定再进行一次循环，如果放电时间仍然低于3小时，则认为寿命终止。要求循环寿命≥300次.
4	Charged Storage Characteristics 荷电保持能力	The cell or battery charged with standard charge mode, Open circuit stored in 20±5℃ for 28 days. Discharged with standard discharge mode. Discharge time should not be less than 4.25h. Then charged with Standard Charge mode, Discharged with standard discharge mode again. Discharge time should not be less than 4.5h. 将电池或电池组按标准充电模式充电后，开路放置在20±5℃环境温度下28天后，以标准放电模式进行放电，放电时间应不低于4.25小时,再次以标准充电模式充电后以标准放电模式放电，放电时间应不低于4.5小时。

4.2 Product environmental adaptability 产品的环境适应性

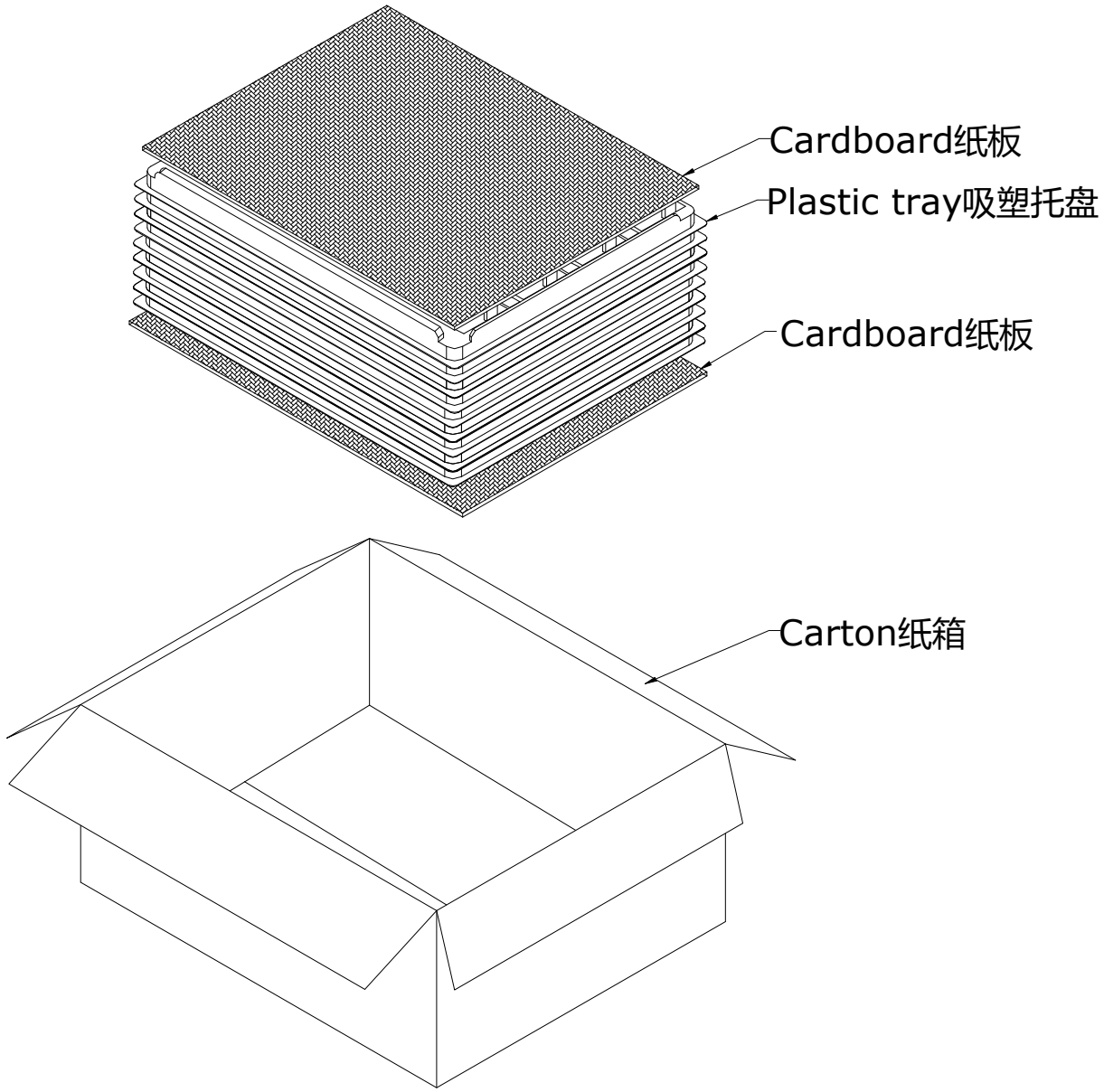
No.	Items/项目	Testing method and criterion /测试方法和判定标准
1	High-temperature discharge 高温放电	The cell or battery charged with standard charge mode, deposit at 55±2℃ hi-temp box for 2h, then discharge with 0.2I_tA current to cut-off voltage. Discharge time should not be less than 5h. 将电池或电池组按标准模式充电后，放入55±2℃的高温箱中恒温2h，然后以0.2I_tA电流放电至终止电压，放电时间应不低于5小时。
2	Low-Temperature discharge 低温放电	The cell or battery charged with standard charge mode, store at -10±2℃ low-temp box for 4h, then discharge with 0.2I_tA current to cut-off voltage. Discharge time should not be less than 3h. 将电池或电池组按标准模式充电后，放入-10±2℃的低温箱中恒温4h后，以0.2I_tA电流放电至终止电压，放电时间应不低于3小时。
3	Constant Humidity and Temperature 恒定湿热	The battery charged with standard charge mode, placed in a temperature of 40±2℃, relative humidity 90~95% of the constant temperature and humidity box 48h, After test, remove the battery pack at 23±2℃ ambient temperature shelved 2h, then discharge with 0.2I_tA current to cut-off voltage. Discharge time should not be less than 3h. 将电池组按标准模式充电后，置于温度为40±2℃，相对湿度为90～95%的恒温恒湿箱内48h，将电池组取出在23±2℃环境温度下搁置2h，以0.2I_tA电流放电至终止电压，放电时间应不低于3小时。

5. Battery drawing (all unit in mm, not in scale)电池图（单位:毫米,不成比例）



Items 项目	Description 描述	Dimension and Spec 尺寸和规格
T	Thickness 厚度	10.3mm max
W	Width 宽度	65mm max
L	Length 长度	140mm max

6.Package Drawing(all unit in mm, not in scale) 包装图（单位:毫米,不成比例）



No.	Item 项目	Description 描述	Remark 备注
1	Packing style 包装方式	Carton& Cardboard& Plastic tray 外箱+纸板+吸塑托盘	
2	Outside size of the box 包装箱外尺寸		
3	Weight 重量	≤10Kg	
4	Carton Sealing method 封箱方式	Transparent adhesive tape& Packing belt 透明封箱胶带+打包带	

7.Warning 使用警告

To ensure proper use of the battery please read the manual carefully before using it.

为了使电池安全的使用及处理请在使用前认真的阅读操作说明

- Keep away from insolate and fire.
- 不能把电池曝晒或丢在火中
- Do not put the battery in a charger or equipment with wrong terminals connected.
- 电池充电时不能把正负极性装反
- Avoid shorting the battery
- 避免短路电池
- Avoid excessive physical shock or vibration.
- 避免过分的物理震动和冲击电池
- Do not disassemble or deform the battery.
- 不能拆解或使电池变形
- Do not immerse in water.
- 不能将电池浸入水中
- Do not use the battery mixed with other different manufacturer, type, or model batteries.
- 不能将其它不同厂家，类型，型号的电池混合使用
- Keep out of the reach of children.
- 禁止小孩接触电池

. charge and discharge 充放电

- Battery must be charged in appropriate condition only.
- 电池必须在合适的条件下充电
- Never use a modified or damaged charger.
- 决不能用故障的充电器给电池充电
- Do not leave battery in charger over 24 hours.
- 电池持续充电不能超过 24H

. storage 贮存

- Store the battery in a cool, dry and well-ventilated area.
- 电池贮存在通风干燥的环境中

. disposal 处理

- Regulations vary for different countries. Disposed in accordance with local regulations.
- 不同国家法规的不同，处理时根据当地的法规。

8 .Battery operation instruction 电池操作说明

8 .1 Charging 充电

Charging current：Do not surpass the largest charging current that specification stipulated。

充电电流：不能超过规格书规定的最大充电电流

Charging voltage：Do not surpass the highest limited voltage that specification stipulated。

充电电压：不能超过规格书规定的最高限制电压

Charging temperature：within temperature scope that specification stipulated。

充电温度：电池充电温度必须按照规格书的温度范围执行

Charge with constant current, then with the constant voltage, no reverse charge, which is dangerous

先恒流后恒压方式充电，禁止颠倒的方式充电。如果电池正负极颠倒充电会带来危险。

8 .2 Discharging current 放电电流

The discharging current cannot surpass the largest discharging current that specification stipulated, the overlarge discharge current can cause the battery heat and capacity reduction。

电池放电电流不能超过规格书规定的最大放电电流，过大的电流放电会造成电池发热和容量衰减。

8 .3 discharge temperature 放电温度

The battery discharge must within temperature scope which specification stipulated

电池放电温度必须按照规格书的温度范围执行

8 .4 Over-discharges 过放电

Short time over discharge does not affect the battery function, but long time over discharges can damage battery performance, and can't use any more. due to its own self-discharge characteristics also lead to over-discharge, to prevent over-discharge occurs, the battery should maintain the certain electric quantity, the cell shall be charged periodically to maintain between 3.8V and 4.0V. Over-discharging may causes loss of cell performance, characteristics, or battery functions. The electrical products shall be equipped with a device to prevent further discharging exceeding a cut-off

voyage specified in the Product Specification. Also the charger shall be equipped with a device to control the recharging procedures as follows:

The cell battery pack shall start with a low current (0.02C) for 30 - 45minutes, i.e. pre-charging, before rapid charging starts. The rapid charging shall be started after the （individual）cell voltage has been reached above 3V within 30 - 45 minutes that can be determined with the use of an appropriate timer for pre-charging. In case the (individual) cell voltage does not rise to 3V within the pre-charging time, then the charger shall have functions to stop further charging and display the cell/pack is at abnormal state.

短时间的过充过放不影响电池的使用，但是长时间的过放电会影响到电池的功能失效，电池永久性不能使用。电池长期不使用时，由于其本身的自放电特性也会导致过放电，为防止过放电的发生，电池应保持一定的电量，将其电压维持在 3.8V 至 4.0V 之间。

过放电会导致电芯性能、电池功能的丧失。

用电器应有装置来防止电池放电至低于本标准书规定的截止电压。此外，充电器还应有装置以防止重复充电，步骤如下：

电池在快速充电之前，应先以一小电流（0.02C）预充电 30~45 分钟，以使（每个）电芯的电压达到 3V 以上，再进行快速充电。可用一记时器来实现该预充电步骤。如果在预充电规定时间内，（个别）电芯的电压仍未升到 3.0V 以上，充电器应能够停止下一步快速充电，并显示该电芯/电池正处于非正常状态。

8 .5 Storage 贮存电池。

The battery is required stored within the temperature range that specification stipulated.

电池贮存在规格书规定的温度范围内。

9 . Handling of Cells 电芯操作注意事项

Since cells are packed in soft material, for protecting it better performance, careful handling is very important.

由于电芯属于软包装，为保证电芯的性能不受损害，必须小心对电芯进行操作。

a) Soft Aluminium Foil 铝箔包装材料

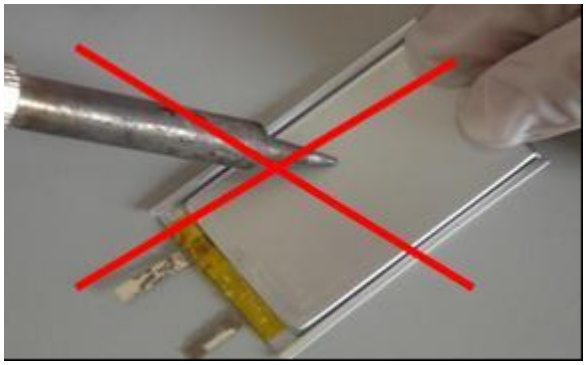
The soft aluminum packing foil may be damaged by sharp matter such as Ni-tabs, pins and needles or other jig and tool. 软包装铝箔可能会被锋利的物品（如：镍极耳、针、刀片或其它工夹具等）损伤。

Not strike cell with any sharp matter. 不要用锋利的物品戳碰电芯

Trim your nail or wear gloves before taking cell. 操作电芯前必须修剪指甲并戴上手套

Clean worktable to sweep away dust. 清洁工作台面，扫除尖锐的颗粒

Avoid component contacting with the edge of foil of cells. Otherwise, there will be corrosion, flatulence and other hidden dangers. 避免导电元件与电芯包装铝箔的边缘接触，否则会有腐蚀、胀气等隐患。

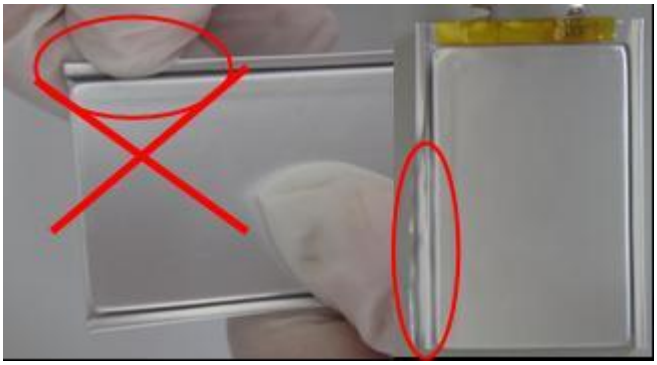


b) Top Sealing Edge 顶封边

Sealing edge on the top of cells is very flimsy and easy to be delaminated. Don't bend or fold this area
顶封边非常容易受到损伤导致分层，禁止弯折顶封边。

c) Fold Edge 折边

The side sealing edge has been folded and fixed in cell forming processes and passed hermetic test. The Aluminum foil may break by re-folding time after time. Don't open and refold this edge.
侧封边已经在电芯成型过程中折好并固定并通过了密封测试，反复打开和弯折可能会导致铝箔断裂。禁止打开或破坏折边。



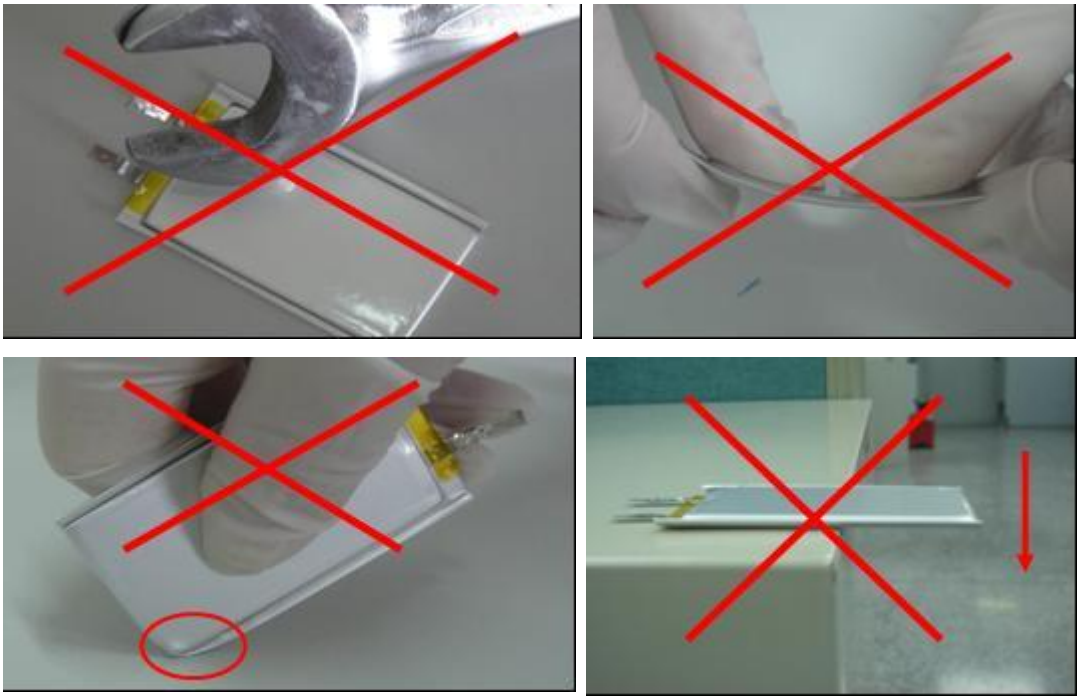
d) Tabs 极耳

The cell tabs are easy to be broken especially for Aluminum tab. doesn't bend the tabs.
极耳的机械强度并不很高（特别是铝极耳），容易被折断。禁止弯折极耳。

f) Mechanical Shock 机械撞击

Don’t fall, shock, and bend cell .

禁止坠落、冲击、弯折电芯。



g) Short 短路

Short of cells is strictly prohibited; it may damage cells, even result in safety accident.

任何时候禁止短路电芯，它会导致电芯严重损坏，甚至引发安全事故。

10. Period of Warranty 保质期

The period of warranty is six months from the date of shipment. Replacement is guaranteed within warranty if battery with defects proven due to manufacturing process instead of the customer’s abuse and misuse.

电池的保质期从出货之日算起为半年。如果证明电池的缺陷是在制造过程中形成的而不是由于用户滥用及错误使用造成，本公司负责退换电池。

11. Other Chemical Reaction 其它化学反应

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges, the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. If the discharge time is much shorter than the normal after full charged, even battery is charged correctly, and this may indicate it is time to change the battery.

由于电池是利用化学反应的原理，所以随时间的增加电池的性能会降低，即使是存放很长一段时间而不使用。如果使用条件如充电、放电及周围环境温度等情形不在指定的使用范围内，也会缩短电池的使用寿命，或者产生漏液导致设备损坏。如果电池充饱电后与正常的放电时间相差很多，即使充电方法正确，这样也表示需要更换电池了。

12. Note: 备注

Any other items which are not covered in this specification shall be agreed by both parties.

本说明书未包括事项应由双方协议确定。