Specification

MODEL: **AAA1100**

Prepared By/Date:
Checked By/Date:
Approved By/Date: 09/01/2017

Customer NO.
Customer Approval
Signature:
Date:
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Amendment Records

Revision	Description	Prepared by	Approved by	Date
A	First Publish			09/01/2017

1. **Scope**

This specification is applies to describe the related Battery product in this Specification and the Battery/cell supplied by Soshine only.

2. **Model：AAA1100**

3. **Appearance**

The cell / battery shall be free from cracks, scars, breakage, rust, discoloration, leakage and deformation.

4. **RATINGS:**

Table below **can** be taken as the basic guideline of evaluation the battery quality.

5.1 Ambient temperature: 20±5℃,Relative Humidity: 65±20%

5.2 Testing facility must conform to the condition：

Ampere meter: IEC 51/IEC 485 stipulated grade 0.5 or above, including the down-lead resistance totally less than 0.01Ω

Resistance tester: AC 1 KHz sine wave 4 terminals testing equipment

5. **General Performance:**

Item	**Specification**	**Conditions**
Standard charge	100 mA（0.1C）	ambient temperature of 20±5℃, Relative Humidity: 65±20%
	16 hrs	
Standard discharge	200 mA (0.2C)	standard charge, the final voltage is 1.0V
Rapid Charge	200 mA（0.2C）	ambient temperature of 20±5℃, Relative Humidity: 65±20%
Rapid discharge	200 mA（0.2C）	standard charge, the final voltage is 1.0V
Trickle Charge	20～50 mA (0.02C～0.05C)	Ta=-10～45 ℃
Nominal Voltage	1.2 V	
Open circuit voltage	≥ 1.25V	Within 1 hr after standard charge
Nominal Capacity	1100 mAh	
Minimum Capacity	≥1000 mAh(0.2C)	Standard charge and Standard discharge
	≥950 mAh(0.2C)	Standard charge and Rapid discharge
Internal Impedance	≤35mΩ	Within 1 hr after standard charge
Charge-retention Rate	60%(600mAh) Charge retention rate ≥Nominal capacity 60%(600mAh)	Storage a period of 28 days after standard charge, then Standard discharge (0.2C) to 1.0V
Cycles Test	≥ 300 Cycles	IEC61951-2:2003（see note 2）

6. **Environment Performance:**

Storage Temperature	Within 1 year	-20～25℃
	Within 6 months	-20～35℃
	Within 1 months	-20～45℃
	Within 1 week	-20～55℃
Operation Temperature	Standard charge	15～25℃
	Fast Charge	0～45℃
	Discharge	0～45℃
Constant humidity and hot performance	No damage	Full charge the battery at current 0.1C, 33±3℃, 80±5%R.H., storage 14 days.

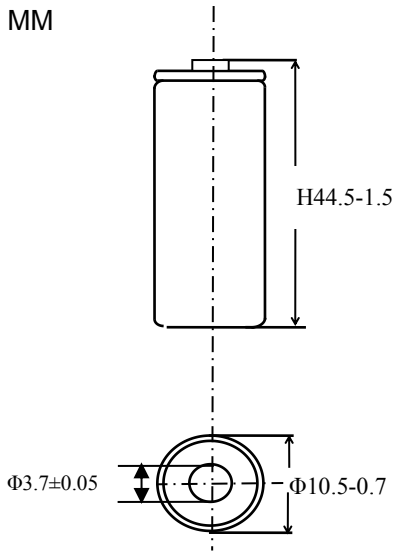
7. Safe Characteristic:

Over-charge	No leakage nor explosion apacity≥100%	0.2C discharge to 1.0V , 0.1C charge for 48 hrs, then test the Capacity with Standard discharge Conditions
Over-discharge	No leakage nor explosion Capacity≥800mAh	0.2C discharge to 1.2V,Cornbine the battery with a 6Ω electric resistance, after stored for a period of 24 hrs, then test the Capacity with Standard discharge Conditions
Vibration Test	Voltage variety: ≤0.03V/cell Internal impedance: ≤5 mΩ/cell	Charge at current 0.1C for 15hrs; place for 24 hrs, check the battery before and after vibration. Vibration condition: Swing: 1.5mm, Frequency: 3000CPM, Vibrate for 1hr to any direction.
Drop Test	Voltage variety: ≤0.03V/cell Internal impedance: ≤5 mΩ/cell	Charge at current 0.1C for 15hrs, place for 24 hrs, check the battery before and after fall down test; Impact condition: Fall down from height 1.2m to any direction on the hard-wood board(Thickness:10mm), test for 3 times
Safety	No disrupt or burst, explosion, but leakage of electrolyte and deformation are acceptable	The battery shall undergo a forced discharge in an ambient temperature of 20±5℃,at a constant current of 0.2I_tA,to a final voltage of 0V.the current shall then bi increased to 1.0I_tA and the forced discharge continued in the same ambient temperature of 20±5℃,for 60 min.
External Short Circuit	No fire and no explosion	After standard charge, short-circuit the cell at 20℃±5℃ until the cell temperature returns to ambient temperature.(cross section of the wire or connector should be more than 0.75mm2)

8. Specifications of single cell

TYPE	Nickel-Metal Hydride cylindrical single cell	
MODEL	AAA1100mAh	
Dimensions	diameter	10.5-0.7mm
	Height	44.5-1.5mm

unit: MM



9. Characteristic of charge/discharge:

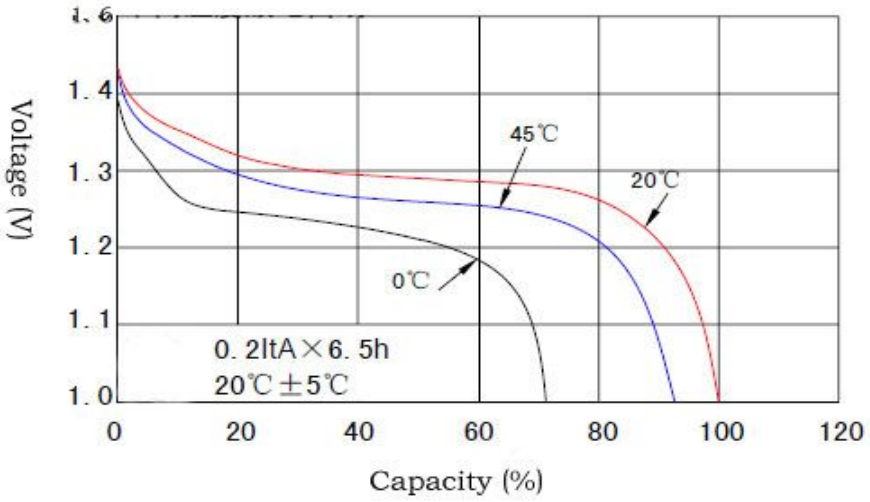
Note 1: Standard charge and Standard discharge

Note 2: (1). Ambient temperature: 20±5℃, Relative Humidity: 65±20%

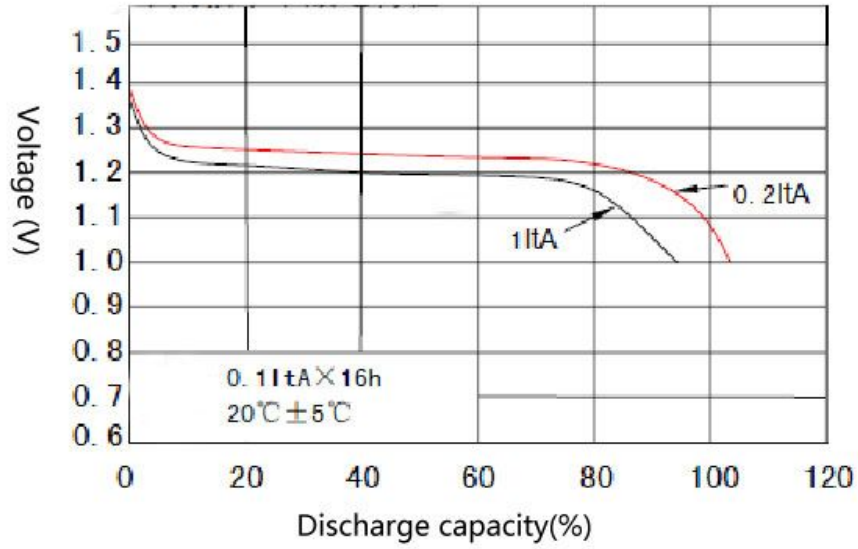
(2). Test method of IEC61951-2:2003：

Cycle Number	Charge	Stand in charged condition	Discharge
1	0.1C×16hrs	None	0.25C×2hrs 20min
2~48	0.25C×3hrs 10min	None	0.25C×2hrs 20min
49	0.25C×3hrs 10min	None	0.25C to 1.0V/cell
50	0.1C×16hrs	1～4hrs	0.20C to 1.0V/cell
Cycles 1 to 50 shall be repeated until the discharge duration on any 50th cycle become less than 3h.At this stage, a repeat capacity measurement as specified for 50 shall be carried out			

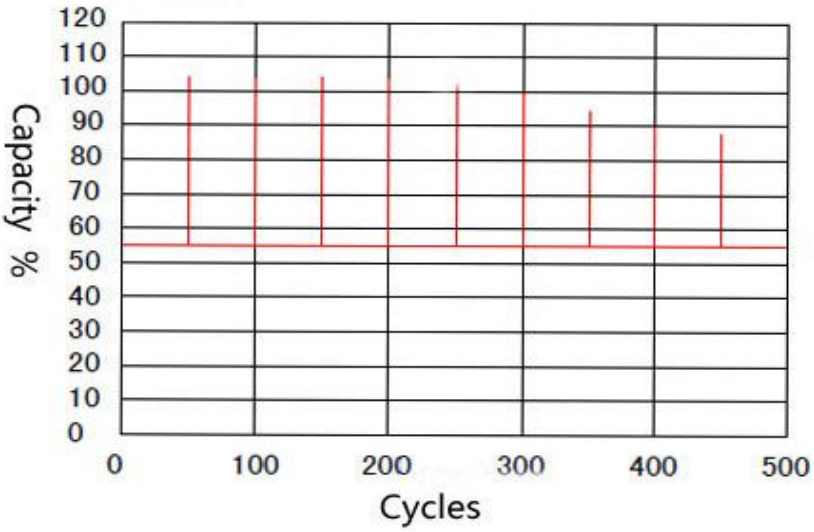
Discharge (different temperature)



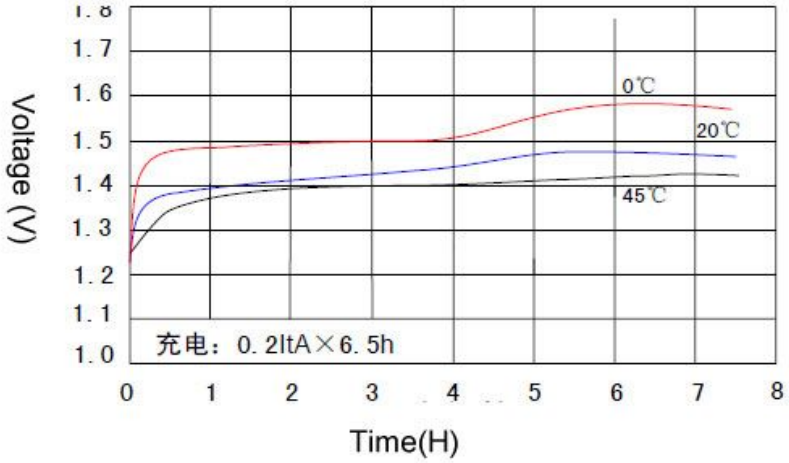
Discharge (different discharge rate)



Cycle life



Charge (different temperature)



10. CAUTIONS IN USE

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

. Handling

- Do not expose to, dispose of the battery in fire.
- Do not put the battery in a charger or equipment with wrong terminals connected.
- Avoid shorting the battery
- Avoid excessive physical shock or vibration
- Do not disassemble or deform the battery.
- Do not immerse in water.
- Do not use the battery mixed with other different make, type, or model batteries.
- Keep out of the reach of children.

. Charge and discharge

- Battery must be charged in appropriate charger only
- Never use a modified or damaged charger.
- Do not leave battery in charger over 24 hours.

. Storage：Store the battery in a cool, dry and well-ventilated area.

. Disposal

- Regulations vary for different countries. Dispose of in accordance with local regulations.

11. Period of Warranty

Guarantee time for one year due to the processing and raw material defectiveness . Suggestion: The products before delivery would be charged 20-80% capacity according to the transportation distance and packing condition. While checking the capacity, please discharge the battery at 0.2C to 1.0V/cell; then charge and discharge the battery at by standard current If the storage time over 3 months or above, please discharge the battery at the current 0.2C to 1.0V/cell, then charge the battery at 0.1C for 15 hours, after that place for 20mins, discharge the battery at 0.2C to 1.0V/cell. After this activation, check the capacity by the standard current charge and discharge the battery. The first time use suggested to take standard charge method to charge the battery to prevent from damage to battery.

12. Transport, Storage:

12.1 Transport

Batteries should be kept in a clean dry and ventilated environment in the process of transportation，And to prevent violent vibration impact or pressure，Prevent the sun and rain，Can use the auto train ships and aircraft and other means of transportation

12.2 Storage：

12.2.1 Temperature and humidity storage：

The battery should be stored at ambient temperature for -20℃~35℃，The relative humidity is not more than a clean and dry 85% indoor ventilation，Should avoid contact with corrosive substances，We should keep away from fire and heat source。

12.2.2 Placed way storage：

Batteries stacked layers of boxes of highest do not exceed five layers，In order to ensure good air circulation between the state of the battery box, Please keep box between 5 ~ 10cm distance, Prevent battery due to the deposition temperature gathering and cause safety accident。

13. Other The Chemical Reaction

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 batteries cannot maintain a charge for long periods of time, even when they are charged correctly, this may indicate it is time to change the battery.

14. Note

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