EVE 亿纬锂能

Cylindrical Power Tool Product

INR18650/25P Report

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Approve : Spencer Xu

做世界上最好的锂电池，成为行业领先企业

Make the Best Lithium Battery in the world, and Become a Technology Leader

Contents

Specifications

No.	Items			SPEC.	Value
1	Basic information	Diameter (mm)		18.35±0.10	18.35
2		Height (mm)		65.00±0.15	65.00
3		Weight (g)		<48.0	45.0
4	Electrical performance	Capacity (0.5A Discharge) (mAh)		≥ 2500	2554
5		Capacity (10A Discharge) (mAh)		≥ 2400	2446
6		ACR (mΩ)		<18	12.4
7		DCR (mΩ)		<30	20.4
8		Rate discharge	20A/10A Capacity (%)	>95	100.1
9		-20ºC 20A discharge drop voltage (V)		>2.0	2.6
10		Cycle life @RT Capacity retention (%)	10A (500 cycles)	>60	80.6
11			20A (500 cycles)	>60	74.8
12			30A (300 cycles)	>60	82.5
13		Cycle life @-10ºC Capacity retention (%)	3A/10A (10 cycles)	>90	98.1
14		60°C 30D Storage	Capacity retention (%)	>80	84.0
15			Capacity recovery (%)	>90	93.1

Electrical performance

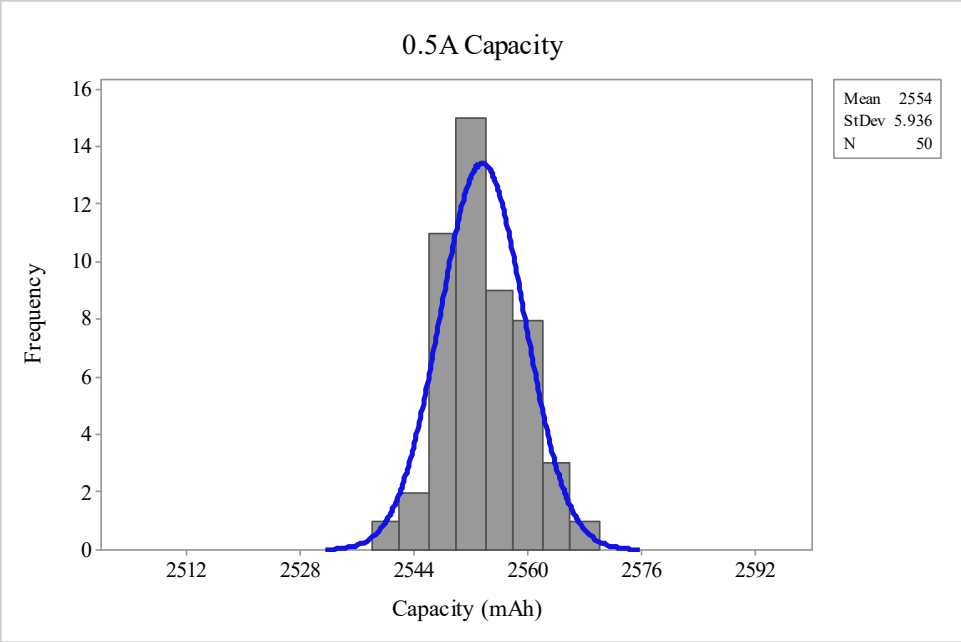
1. Capacity

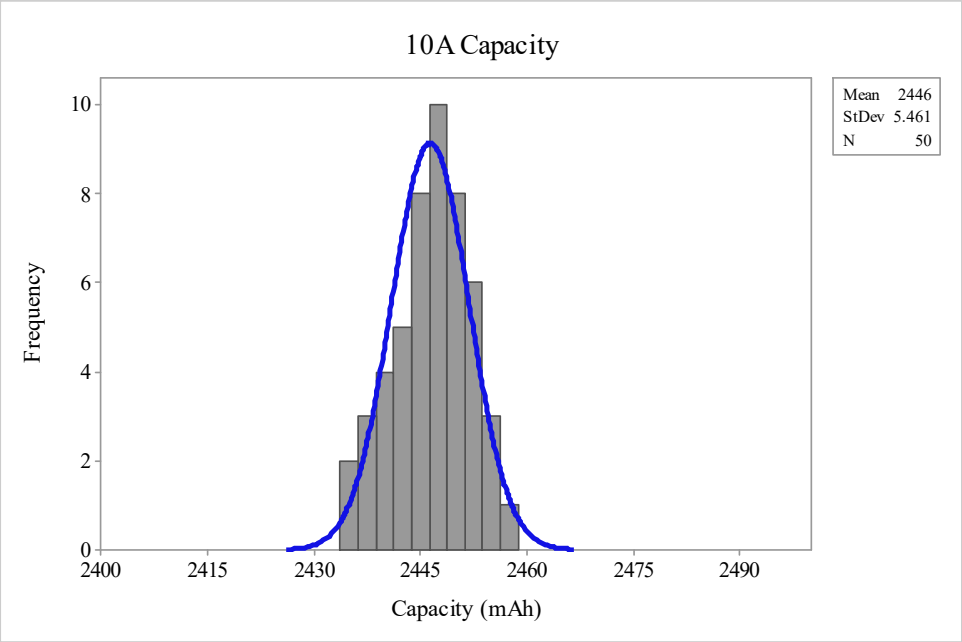
Test Method

Step1: 1.25A CC-CV to 4.2V by 0.1A cut-off, rest 10min.

Step2: Discharge by 0.5A / 10A to 2.5V.

Test temperature: 25±2ºC.





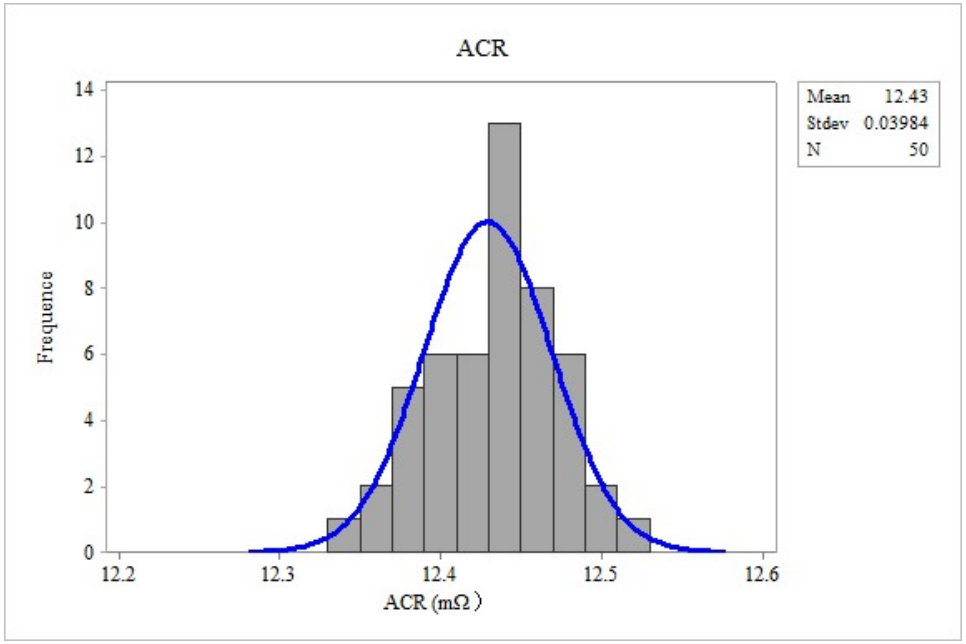
2. Impedance

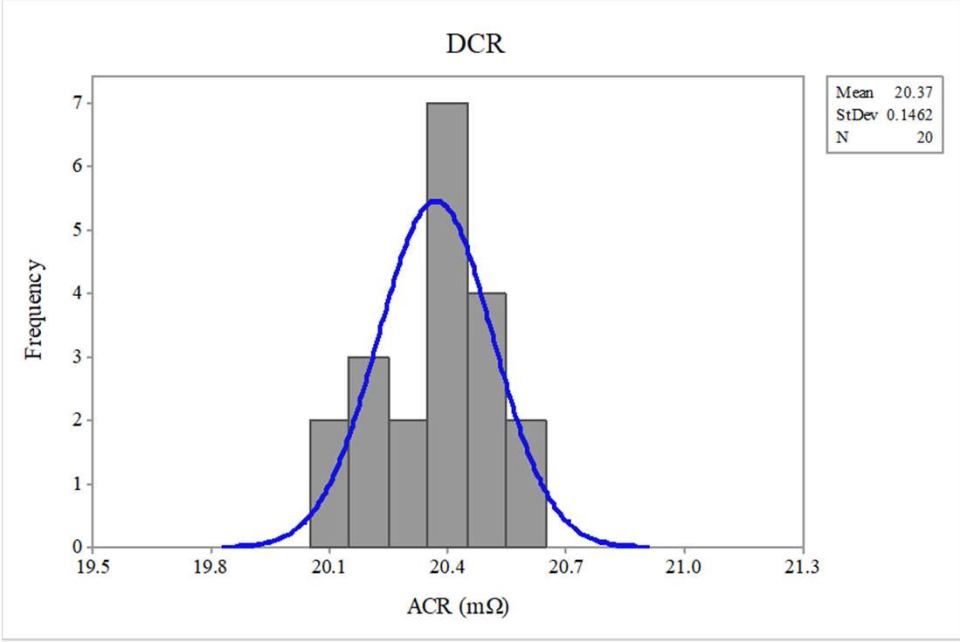
Test Method

ACR: 30%SOC, 1kHz.

DCR: 100%SOC, 0.1A-10s / 10A-1s.

Test temperature: 25±2ºC.





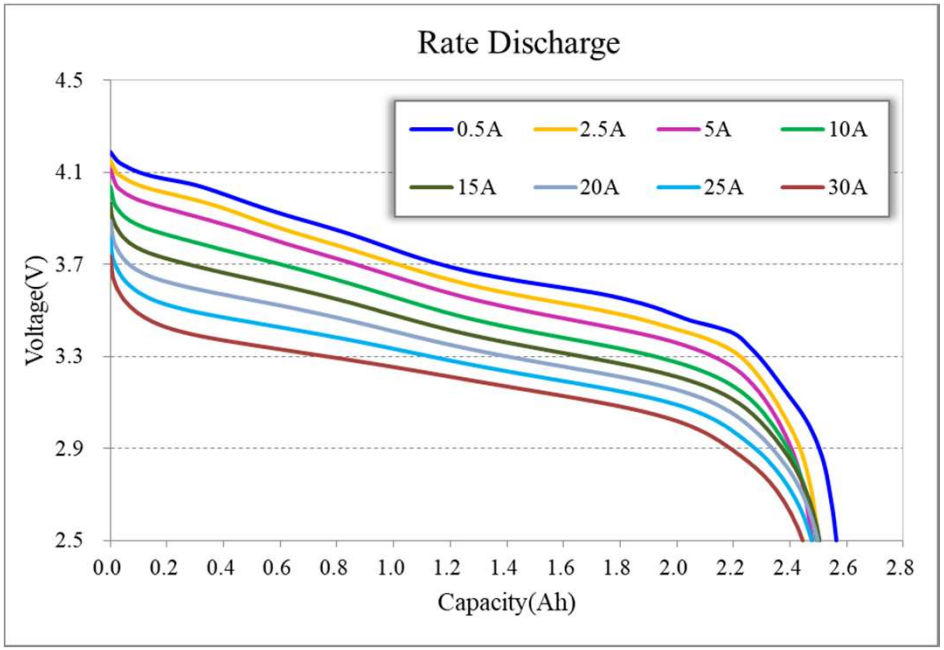
3. Rate discharge

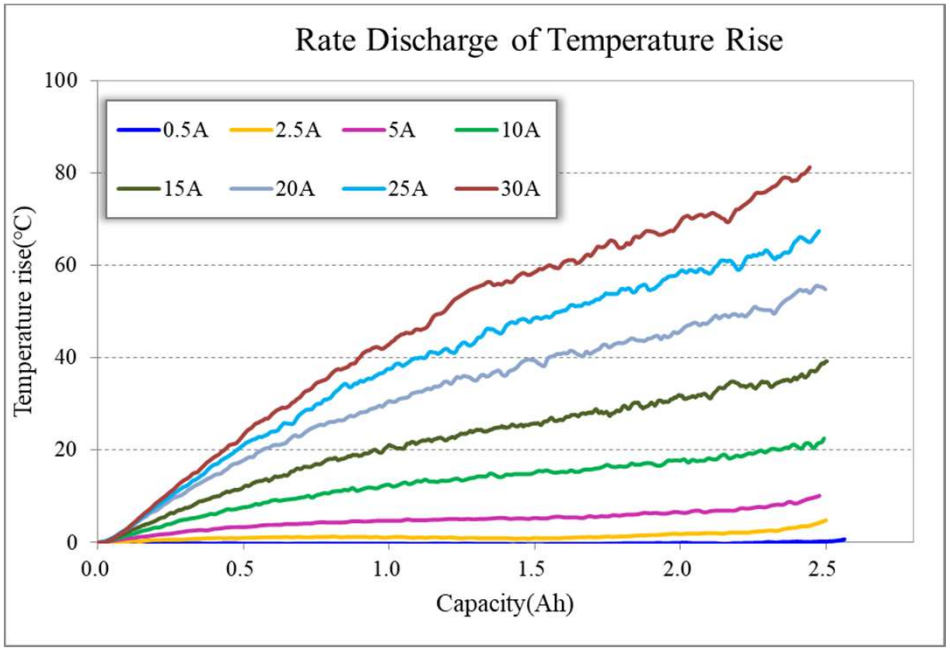
Test Method

Step1: 4A CC-CV to 4.2V by 0.1A cut-off, rest 10min.

Step2: Discharge by 0.5A/2.5A/5A/10A/15A/20A/25A/30A to 2.5V, rest 30min.

Test temperature: 25±2ºC.





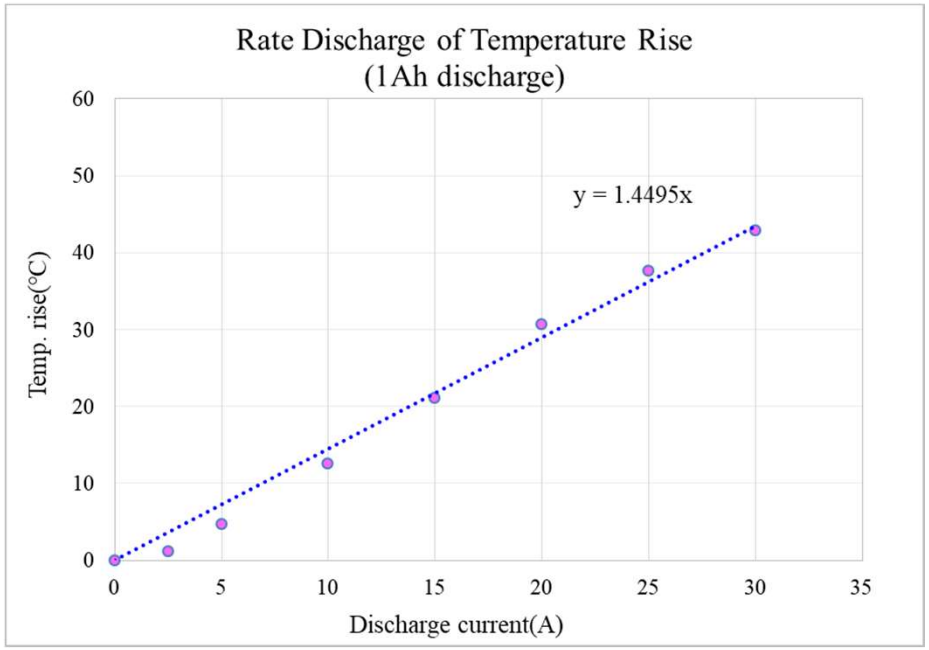
3. Rate discharge

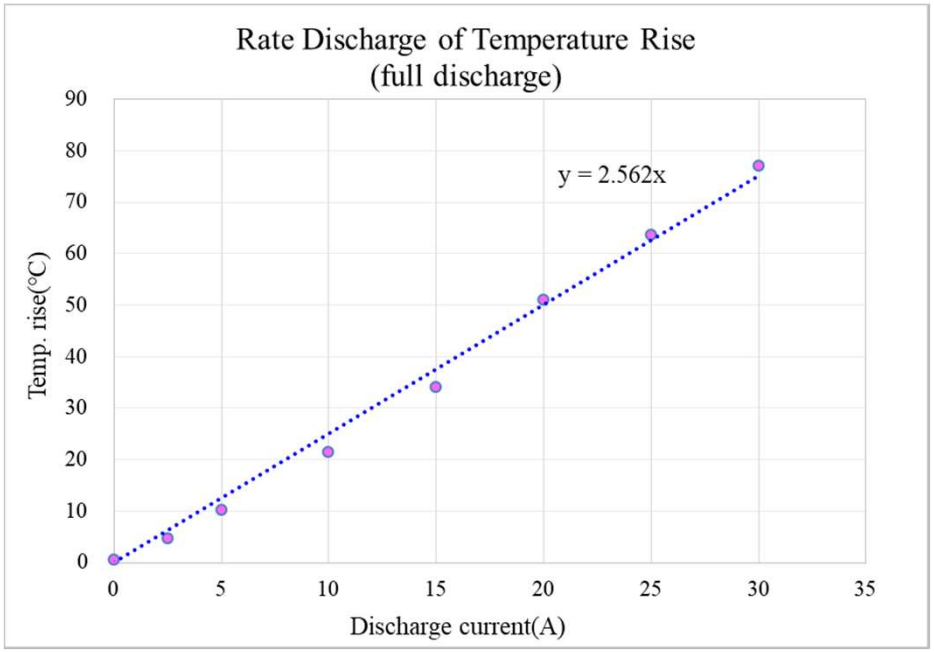
Test Method

Step1: 4A CC-CV to 4.2V by 0.1A cut-off, rest 10min.

Step2: Discharge by 0.5A/2.5A/5A/10A/15A/20A/25A/30A to 2.5V, rest 30min.

Test temperature: 25±2ºC.





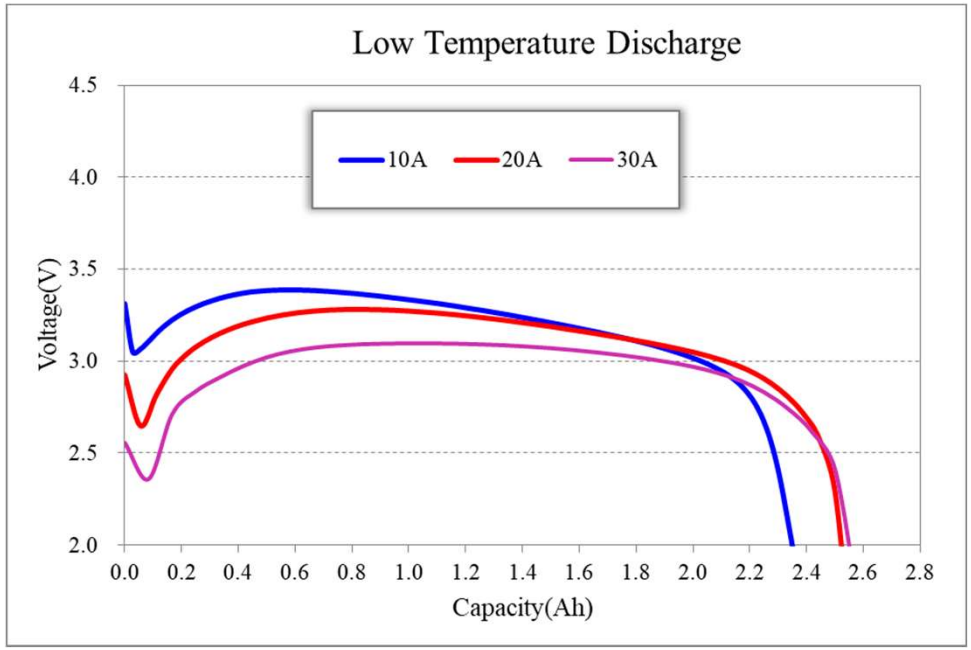
4. Low temperature discharge

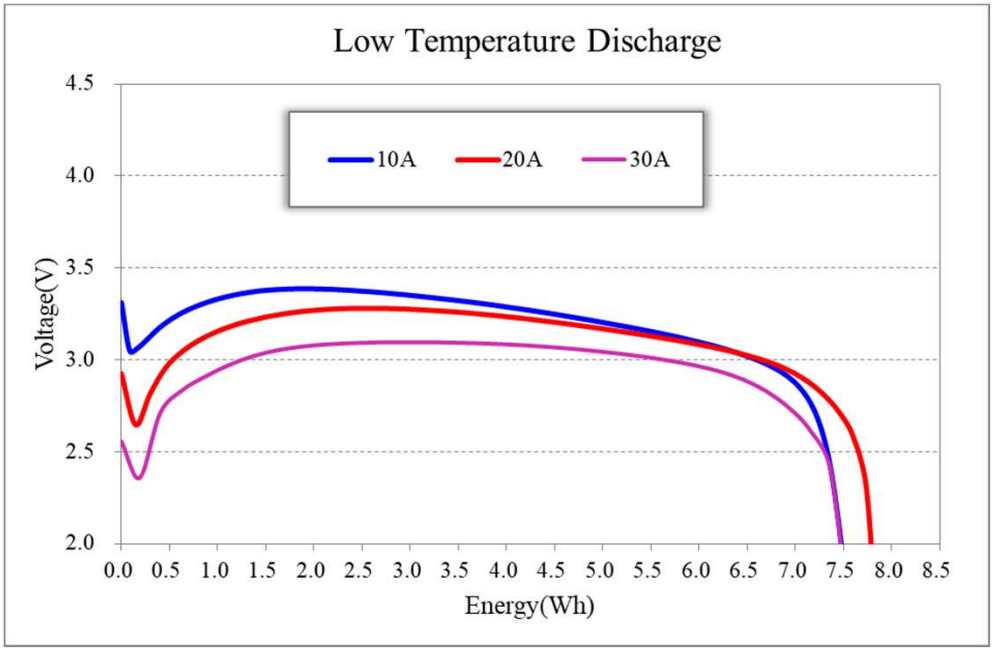
Test Method

Step1: 4A CC-CV to 4.2V by 0.1A cut-off @ 25±2ºC.

Step2: -20±2ºC rest 3h, discharge by 10A / 20A / 30A to 1.0V, rest 30min.

Test temperature: -20±2ºC.





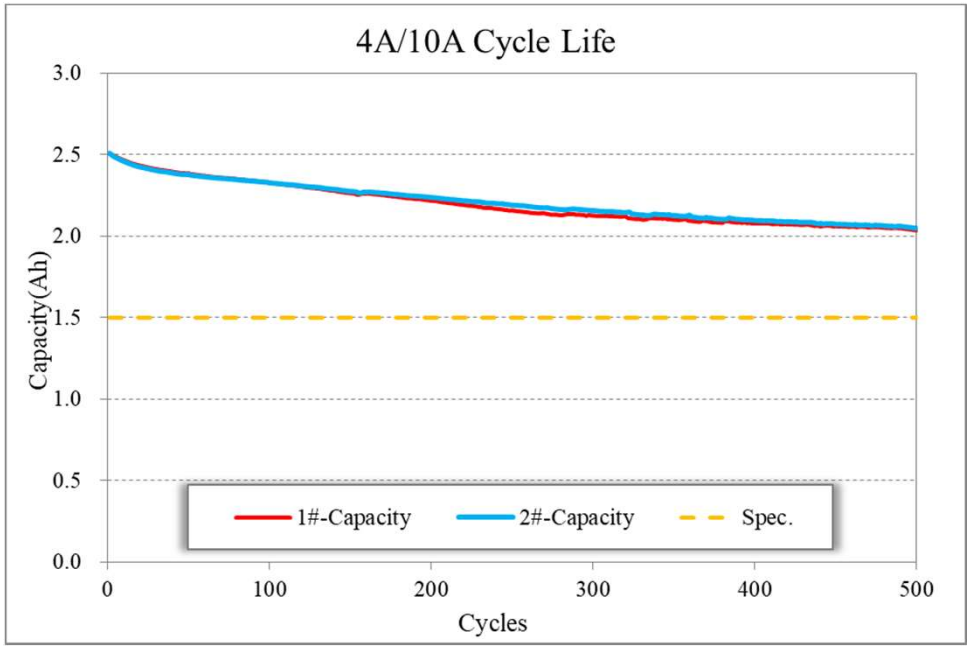
5. Cycle life-4A/10A, RT

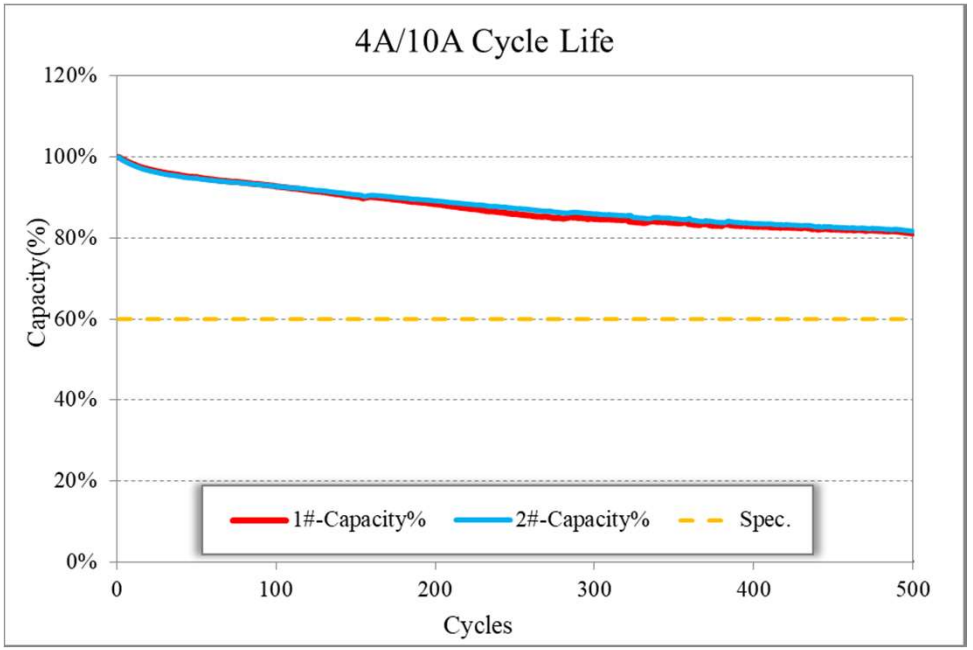
Test Method

Step1: 4A CC-CV to 4.2V by 0.1A cut-off, rest 10min.

Step2: Discharge by 10A to 2.5V, rest 30min.

Test temperature: 25±2ºC.





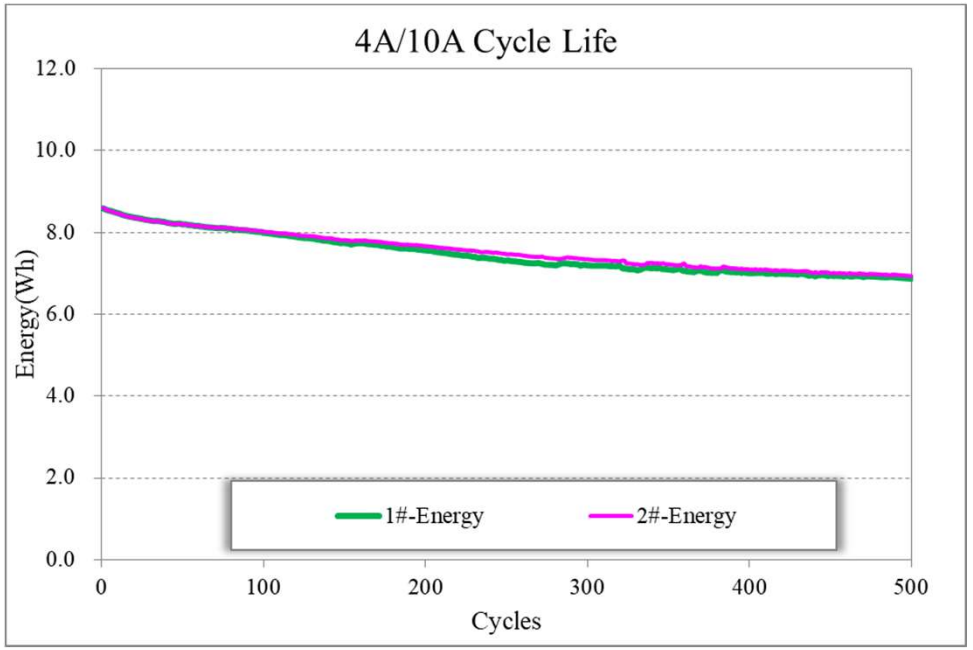
5. Cycle life-4A/10A, RT

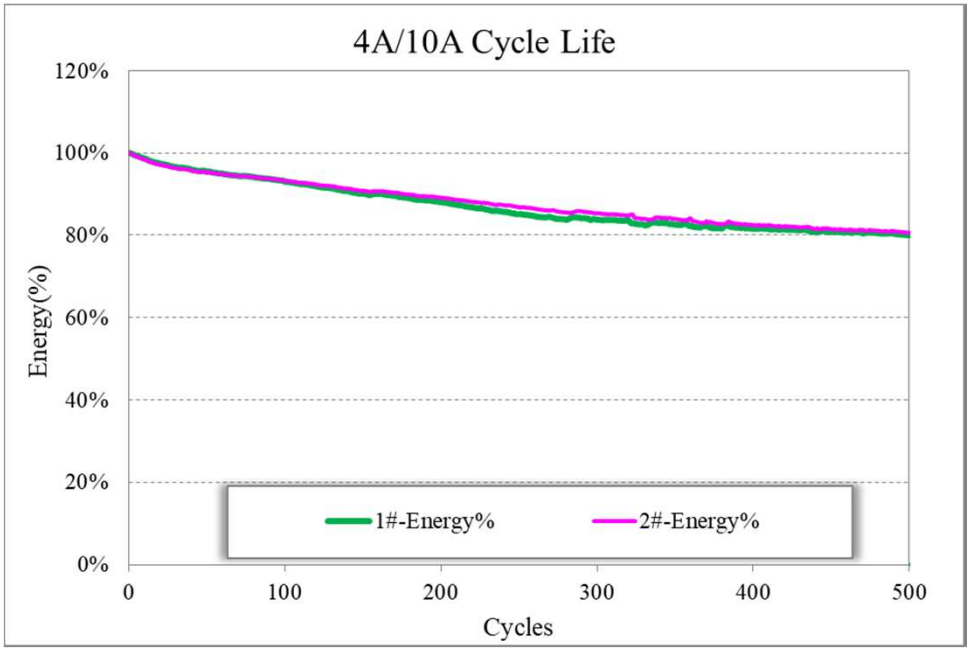
Test Method

Step1: 4A CC-CV to 4.2V by 0.1A cut-off, rest 10min.

Step2: Discharge by 10A to 2.5V, rest 30min.

Test temperature: 25±2ºC.





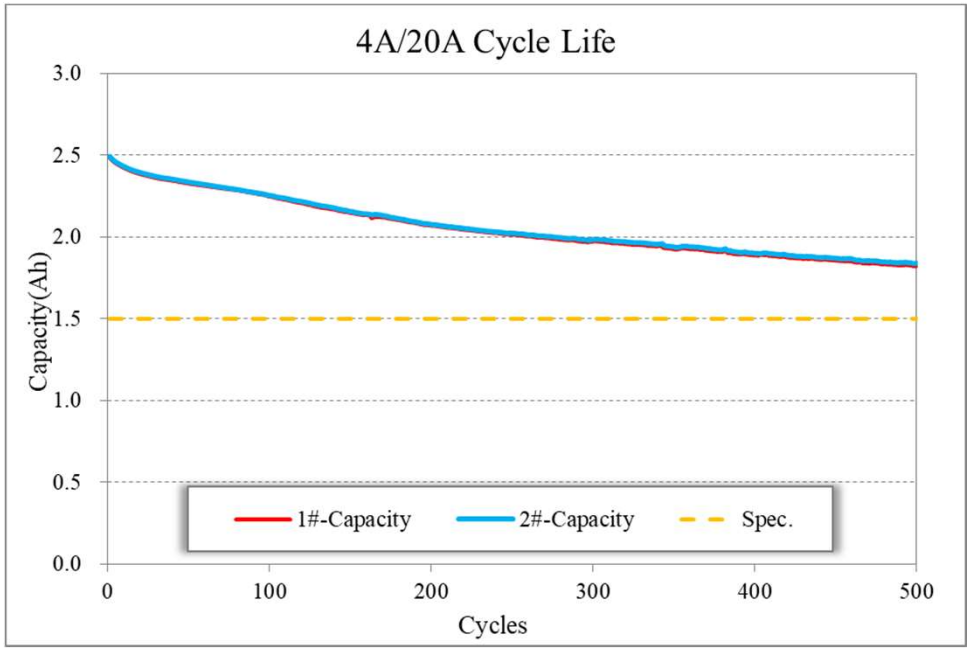
6. Cycle life-4A/20A, RT

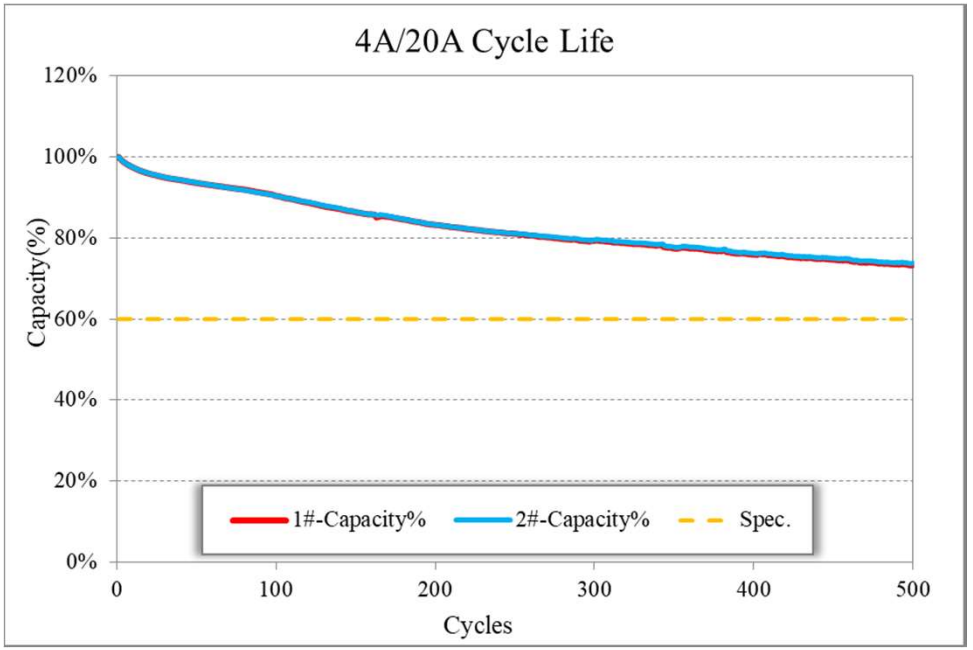
Test Method

Step1: 4A CC-CV to 4.2V by 0.1A cut-off, rest 10min.

Step2: Discharge by 20A to 2.5V, rest 30min.

Test temperature: 25±2ºC.





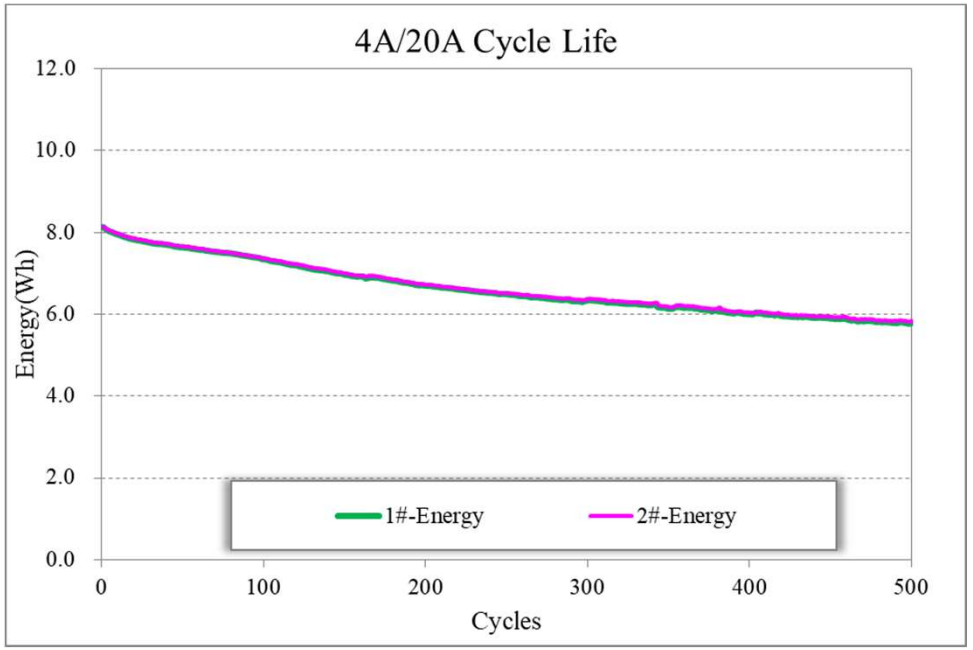
6. Cycle life-4A/20A, RT

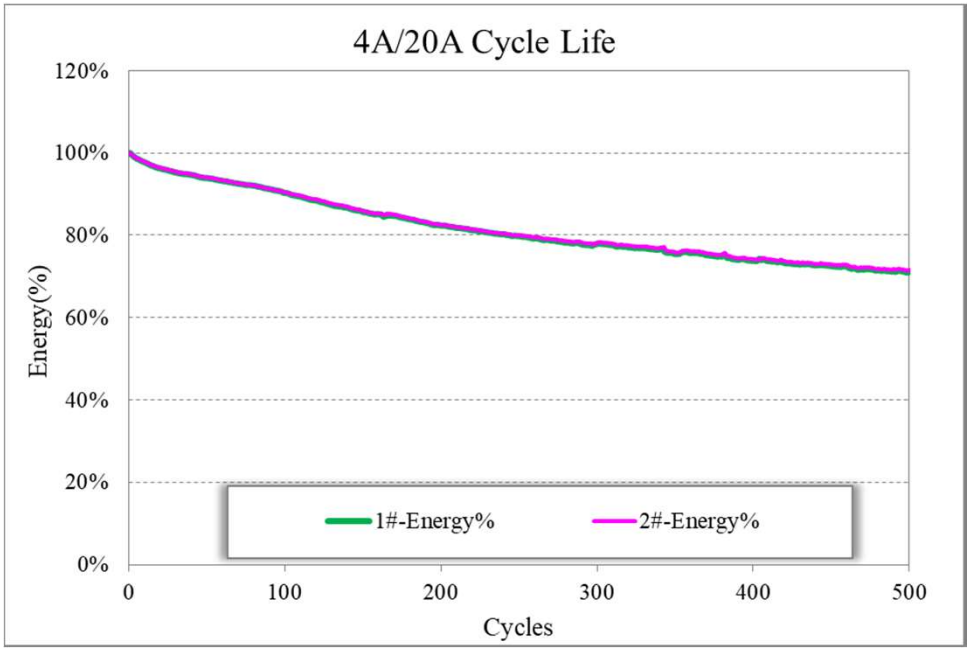
Test Method

Step1: 4A CC-CV to 4.2V by 0.1A cut-off, rest 10min.

Step2: Discharge by 20A to 2.5V, rest 30min.

Test temperature: 25±2ºC.





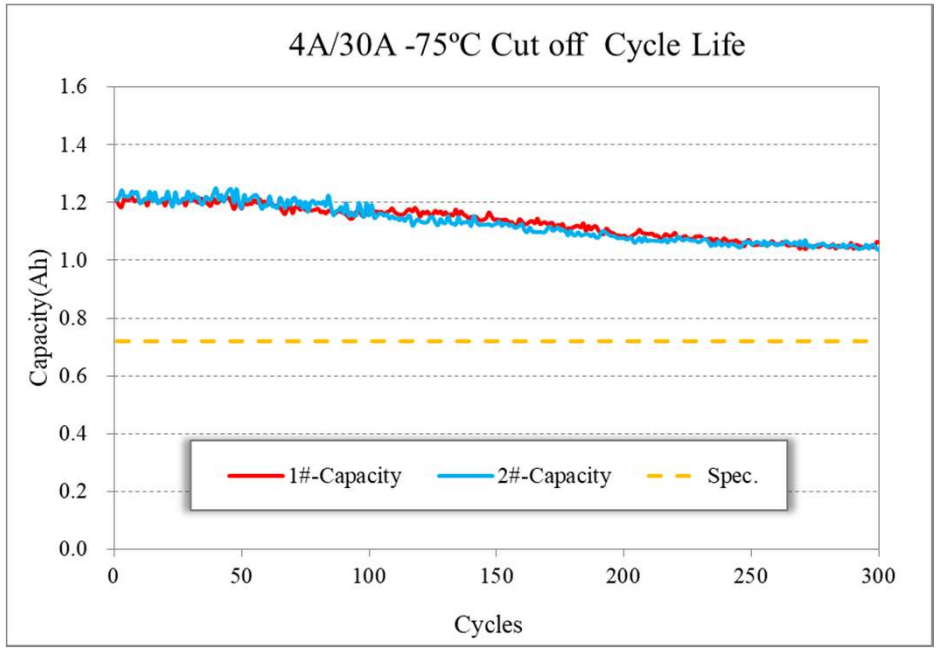
7. Cycle life-4A/30A 75℃ cut off, RT

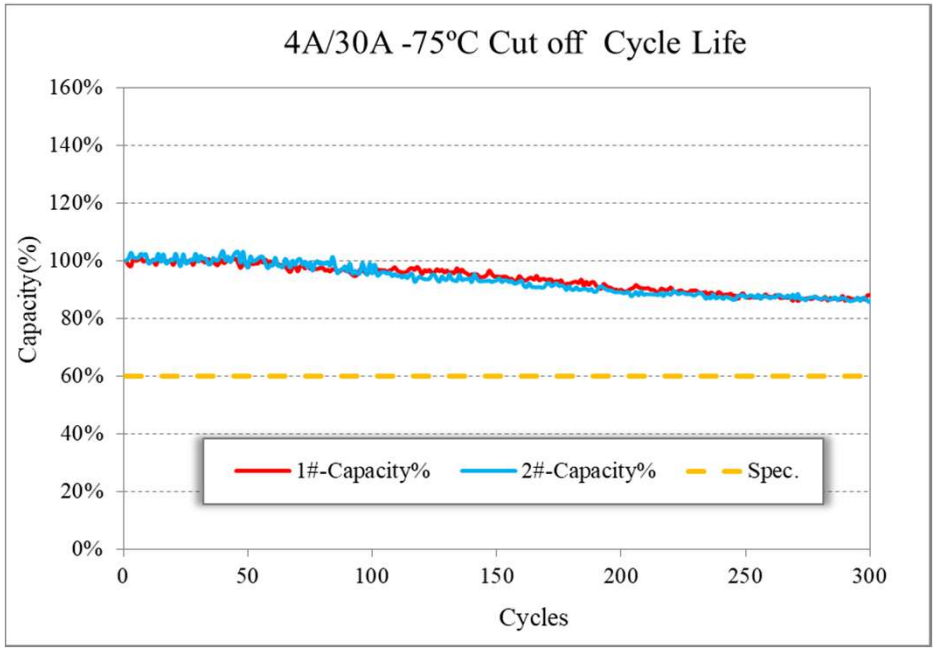
Test Method

Step1: 4A CC-CV to 4.2V by 0.1A cut-off, rest 10min.

Step2: Discharge by 30A to 2.5V, 75℃ cut off , rest 30min.

Test temperature: 25±2ºC.





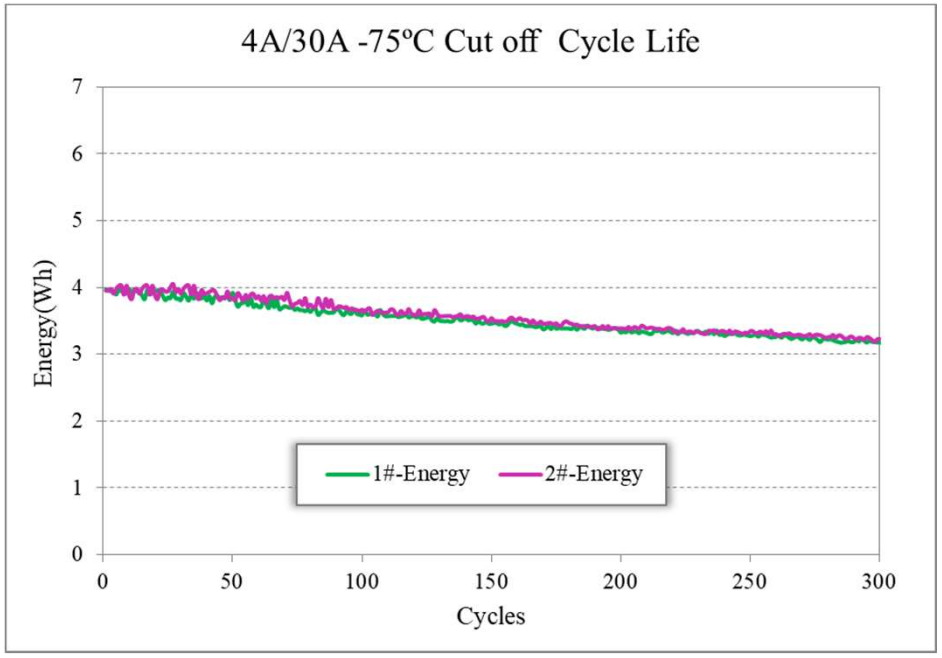
7. Cycle life-4A/30A 75℃ cut off, RT

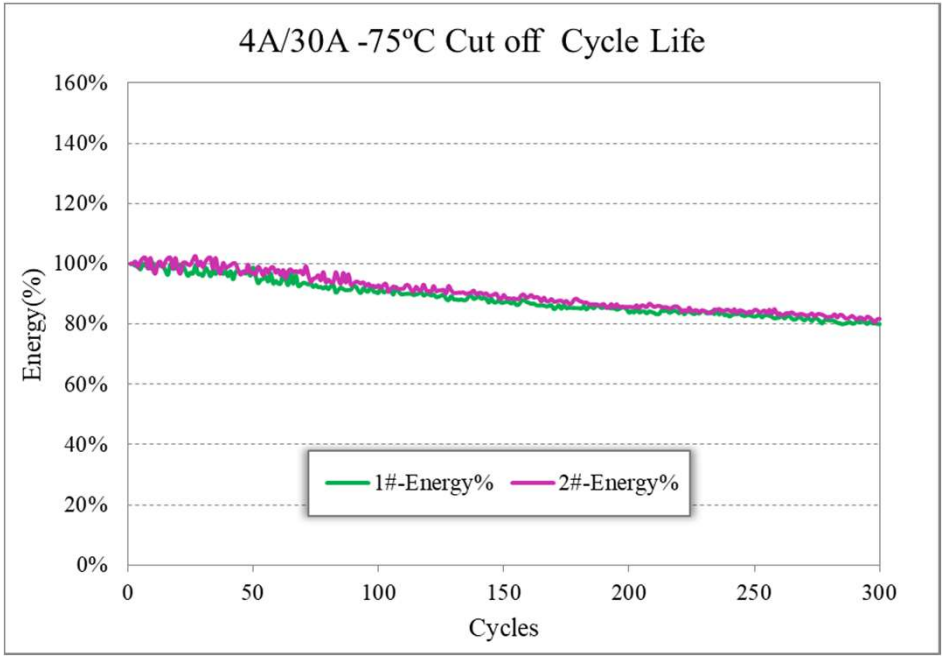
Test Method

Step1: 4A CC-CV to 4.2V by 0.1A cut-off, rest 10min.

Step2: Discharge by 30A to 2.5V, 75℃ cut off , rest 30min.

Test temperature: 25±2ºC.





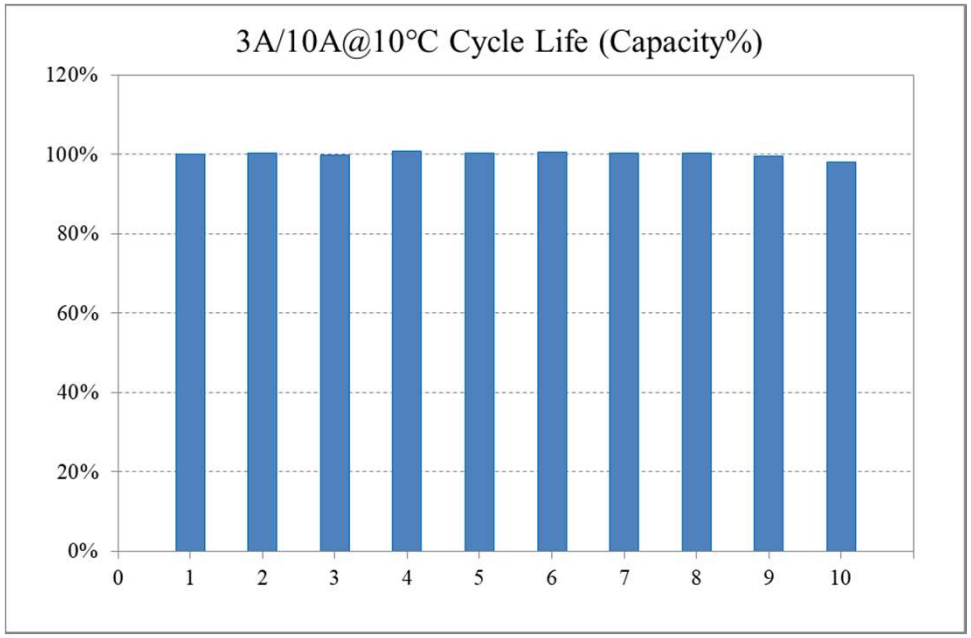
8. Cycle Life-3A/10A, -10℃

Test Method

Step1: 3A CC-CV to 4.2V by 0.1A cut-off, rest 10min.

Step2: Discharge by 10A to 2.5V, rest 30min.

Test temperature: -10±2ºC.



9. High temperature storage

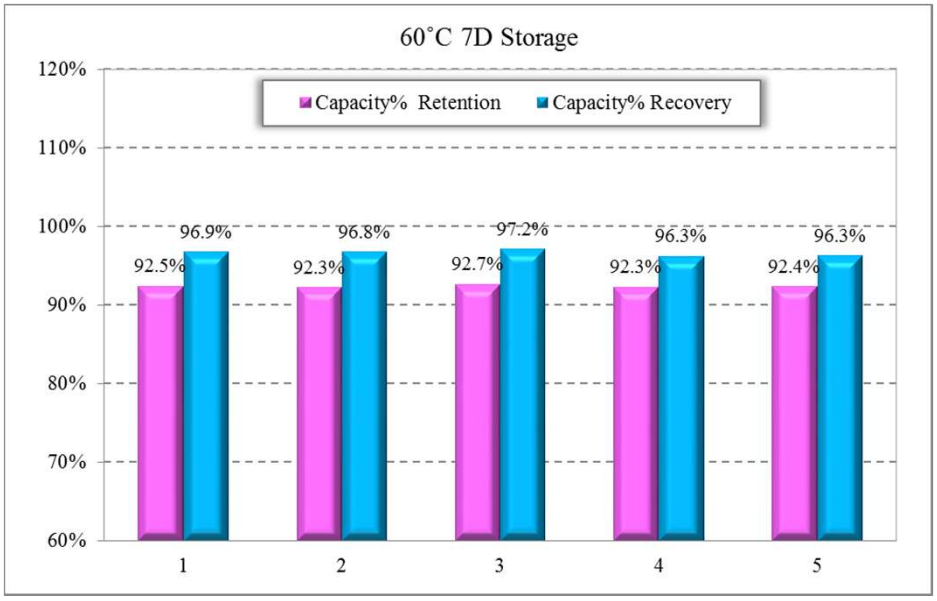
Test Method

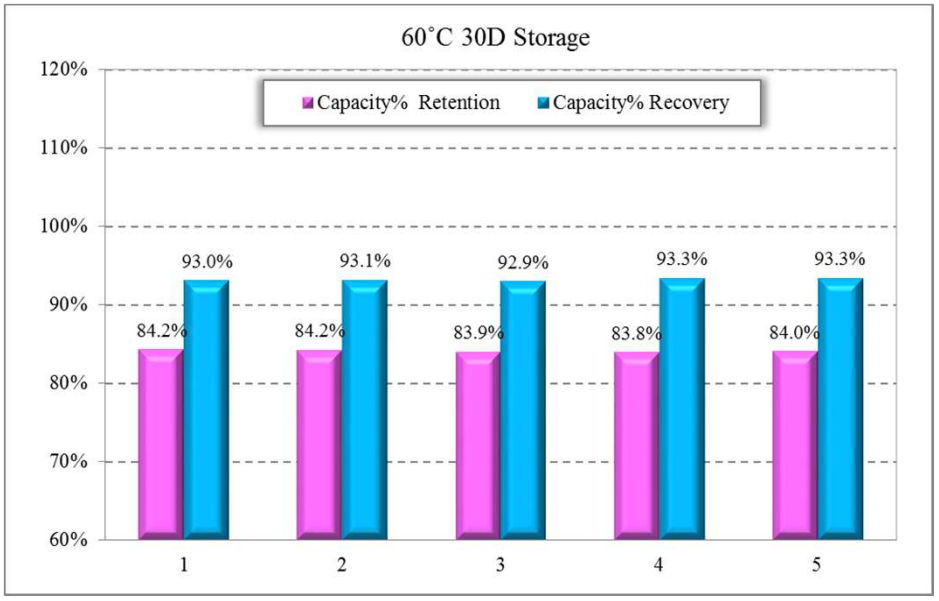
Step1: 4A CC-CV to 4.2V with 0.1A cut-off, rest 10mins.

Step2: Discharge with 2.5A to 2.5V, record initial capacity.

Step3: 4A CC-CV to 4.2V with 0.1A cut-off, 60°C storage 7/30days.

Step4: Discharge with 2.5A to 2.5V, record retention capacity, repeat step1 to step2 for 3 cycles and record recovery capacity.





10. Short Test @ RT

Test method: The fully charged cell is short-circuited by connecting with a circuit of with a circuit of 5mΩ/20mΩ/40mΩ/60mΩ/80mΩ/100mΩ at 25±5ºC.

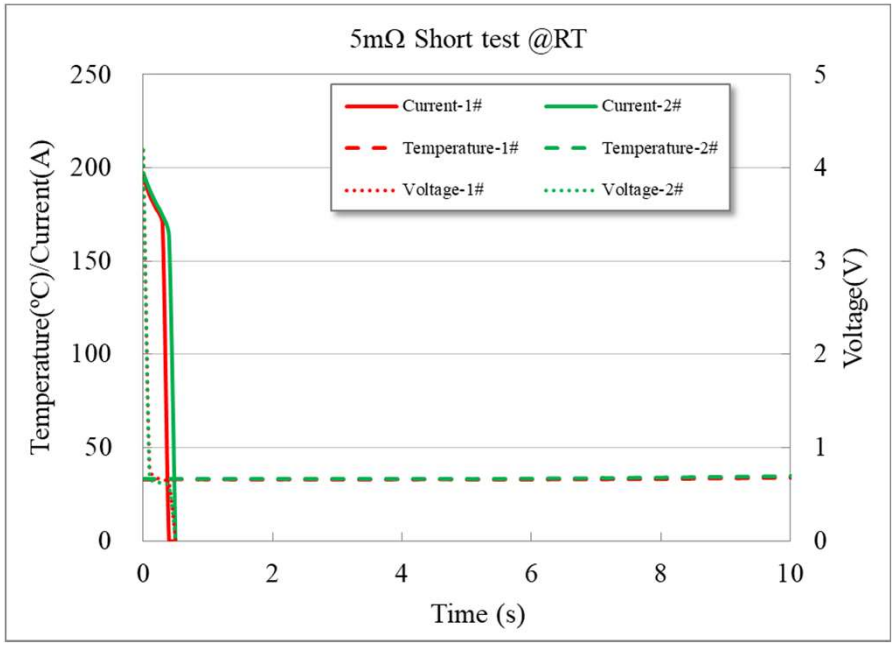
Standard: No fire, no explosion.

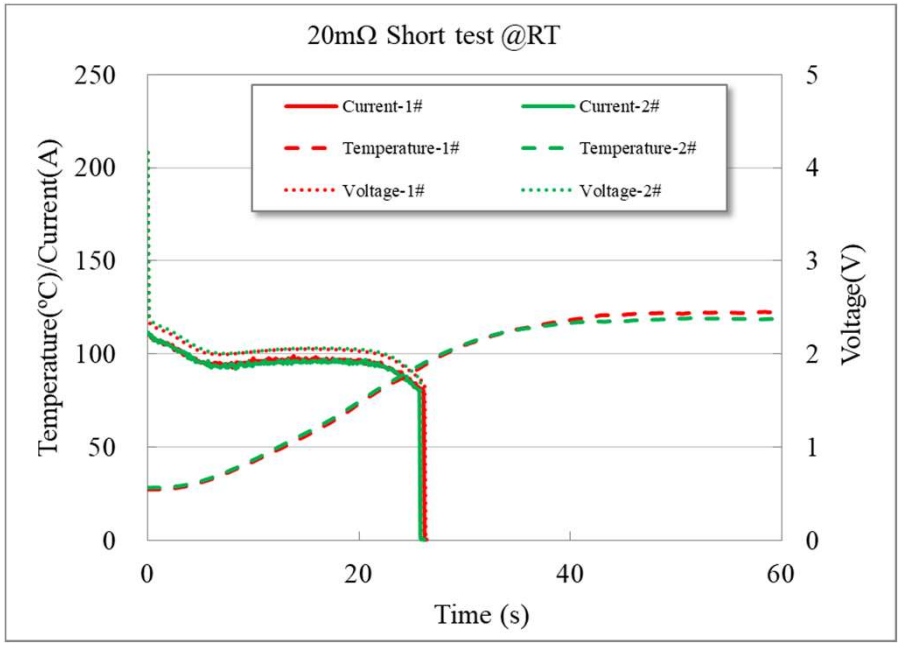
No.	Resistance	Phenomenon							Disassembly			Conclusion
		Max.Current(A)	Short Time(s)	Max. Temperature(ºC)	Leakage	Smoke	Fire	Explode	CID	VENT	Al Tab	
1	5mΩ	216	4	75	N	N	N	N	N	N	Y	Pass
2	20mΩ	110	26	123	N	N	N	N	N	N	Y	Pass
3	40mΩ	73	67	123	N	N	N	N	Y	N	N	Pass
4	60mΩ	54	129	126	N	N	N	N	Y	N	N	Pass
5	80mΩ	43	206	134	N	N	N	N	Y	N	N	Pass
6	100mΩ	33	237	140	N	N	N	N	Y	N	N	Pass

10. Short Test @ RT

Test method: The fully charged cell is short-circuited by connecting with a circuit of with a circuit of 5mΩ/20mΩ/40mΩ/60mΩ/ 80mΩ/100mΩ at 25±5ºC.

Standard: No fire, no explosion.

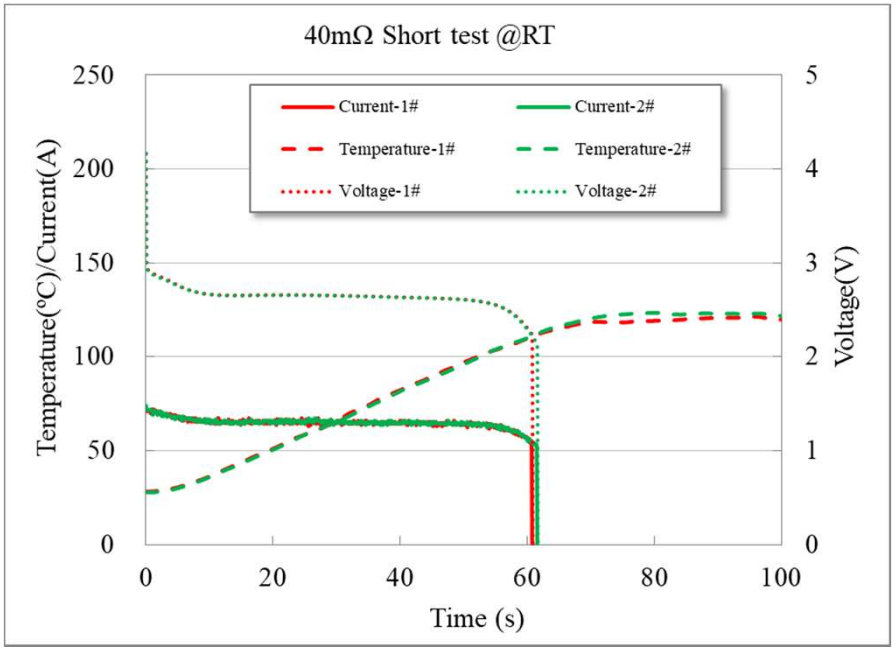


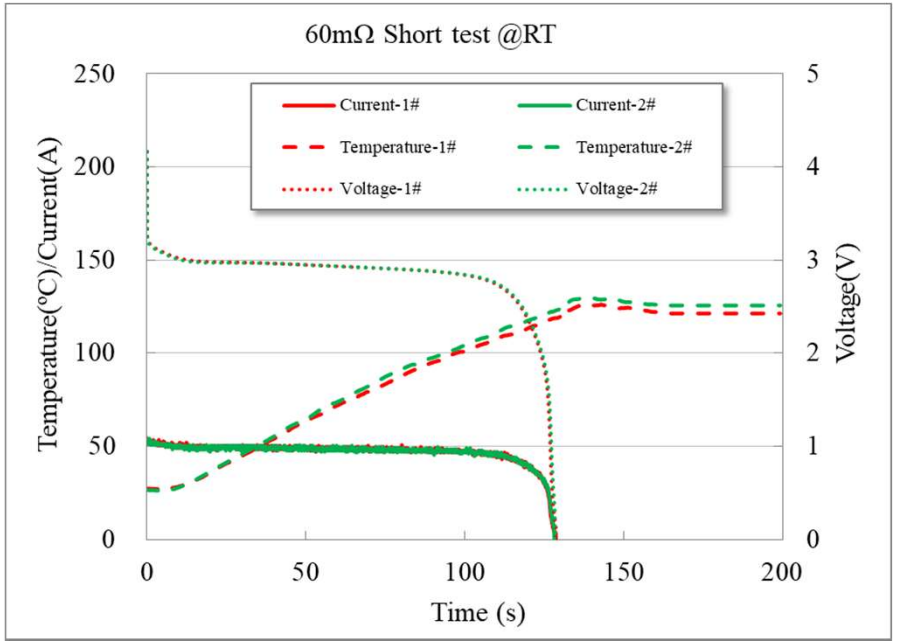


10. Short Test @ RT

Test method: The fully charged cell is short-circuited by connecting with a circuit of with a circuit of 5mΩ/20mΩ/40mΩ/60mΩ/80mΩ/100mΩ at 25±5ºC.

Standard: No fire, no explosion.

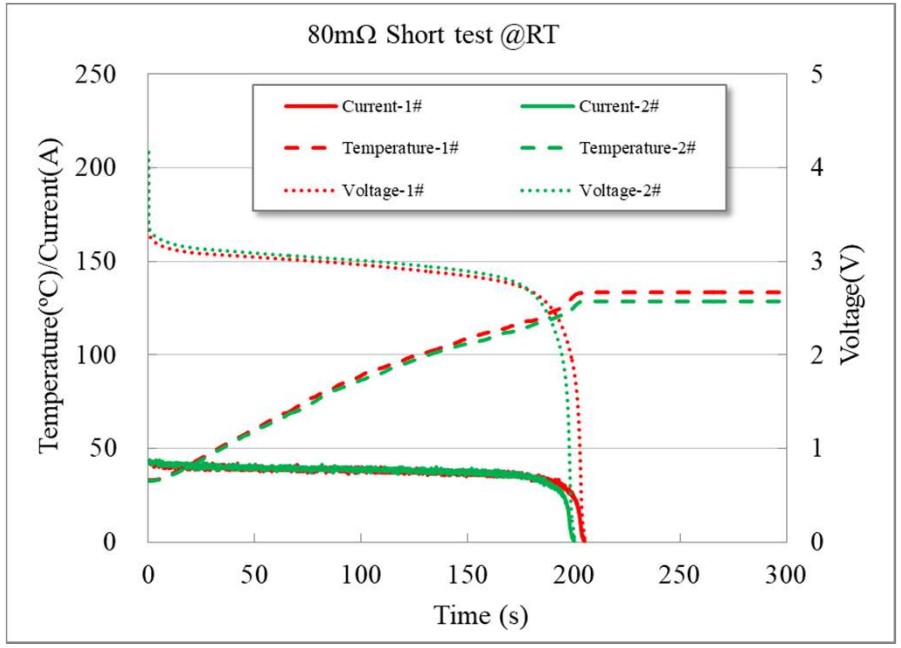


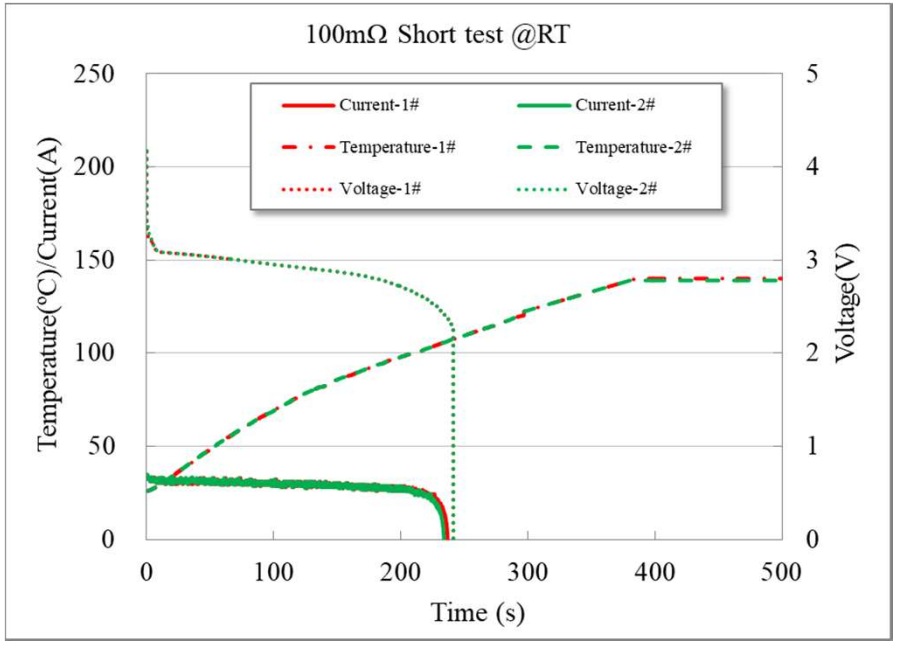


10. Short Test @ RT

Test method: The fully charged cell is short-circuited by connecting with a circuit of with a circuit of 5mΩ/20mΩ/40mΩ/60mΩ/ 80mΩ/100mΩ at 25±5ºC.

Standard: No fire, no explosion.



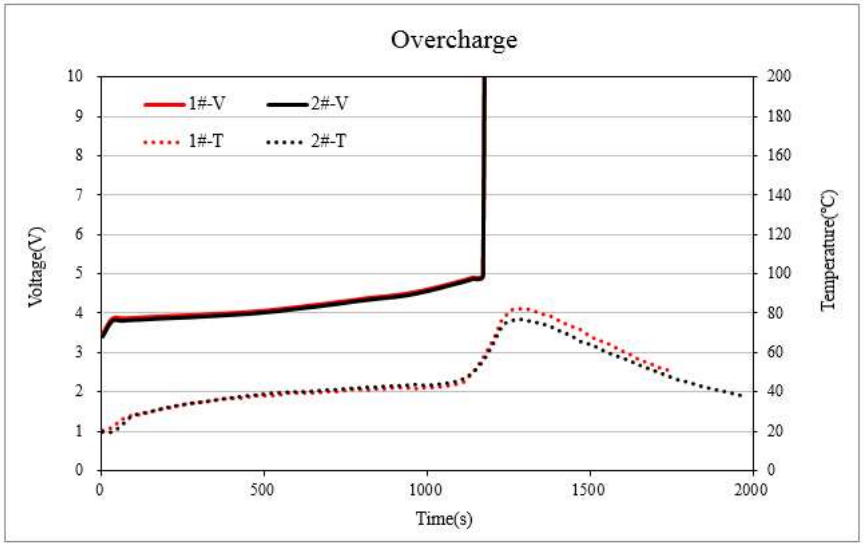


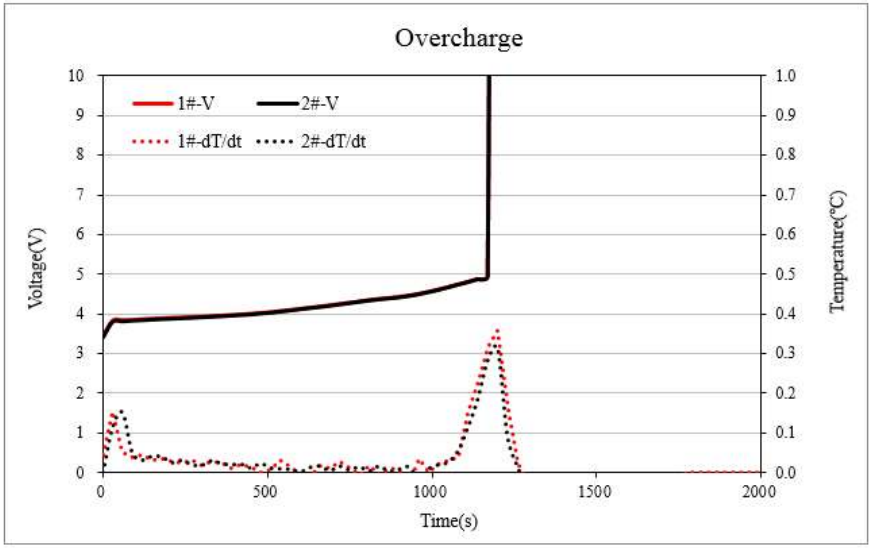
11. Overcharge Test @ 8.2A/7.5V

Test method: The fully discharged cell is charged with 8.2A to 7.5V at 25±5ºC.

Standard: No fire, no explosion.

No.	Phenomenon							Disassembly		Conclusion
	Max. Temperature (ºC)	Max. Temperature Rise Rate (ºC)	Overcharge Time (s)	Leak	Smoke	Fire	Explode	CID	VENT	
1	86	0.35	1290	N	N	N	N	Y	N	Pass
2	82	0.31	1290	N	N	N	N	Y	N	Pass





12. Other Safety Test

No.	Item	Test Standard	Test Method	Standard	Conclusion
1	Drop test	IEC 62133-2017	A fully charged cell is dropped 3 times from a height of 1.0m onto a concrete floor.	No fire, no explosion	Pass
2	Vibration test	UN38.3-2015	For X and Y axis with cylindrical cell 7Hz→200Hz→7Hz for 15min, repetition 12 times totally 3 hours, the acceleration 1g during 7 to 18Hz, then amplitude 1.6mm and maximum 8g up to 200Hz.	No fire, no explosion, no leakage	Pass
3	Forced Discharge	IEC62133-2017	A fully discharged cell is subjected to a reverse charge at 1C for 90 minutes.	No fire, no explosion	Pass
4	Heating Test	UL 1642-2012	A fully charged cell is heated in a gravity convection and stayed at 130±2 ºC for 10min.	No fire, no explosion	Pass
5	Low Pressure	IEC62133-2017	Fully standard charged cell is to be stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature.	No fire, no explosion and no leakage with less than 10% of OCV drop.	Pass

THANKS

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