EVE 亿纬锂能

Cylindrical Power Tool

ICR18650/20P Report

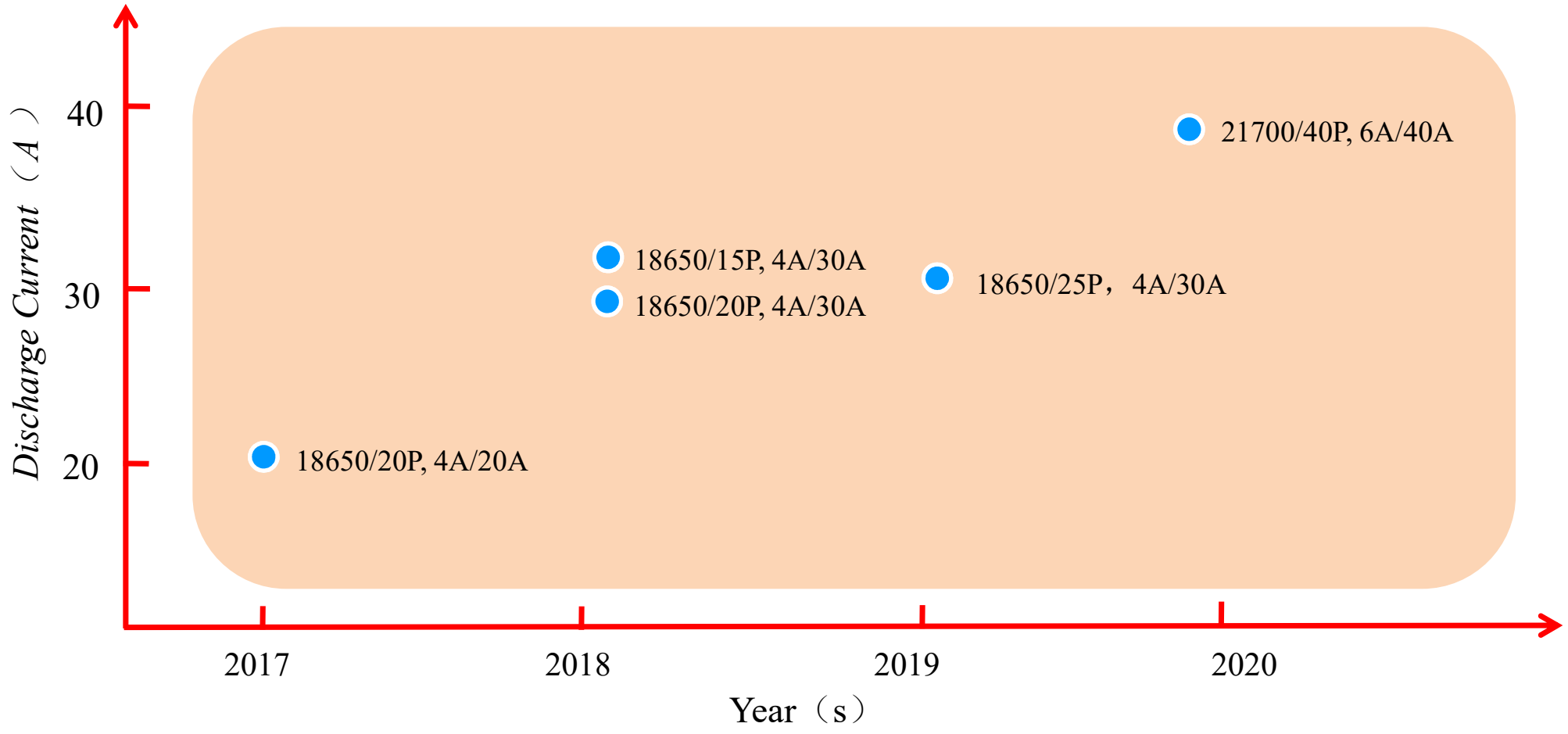
做世界上最好的锂电池，成为行业领先企业

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

Contents

1. Product Roadmap

High Power Cylindrical Cell Roadmap



2. Specifications

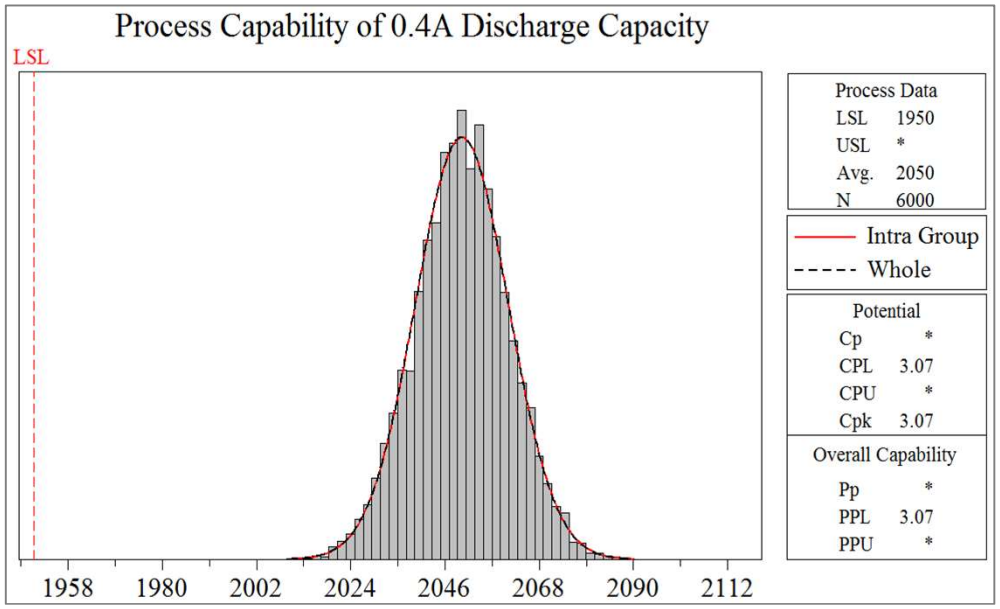
ICR18650/20P

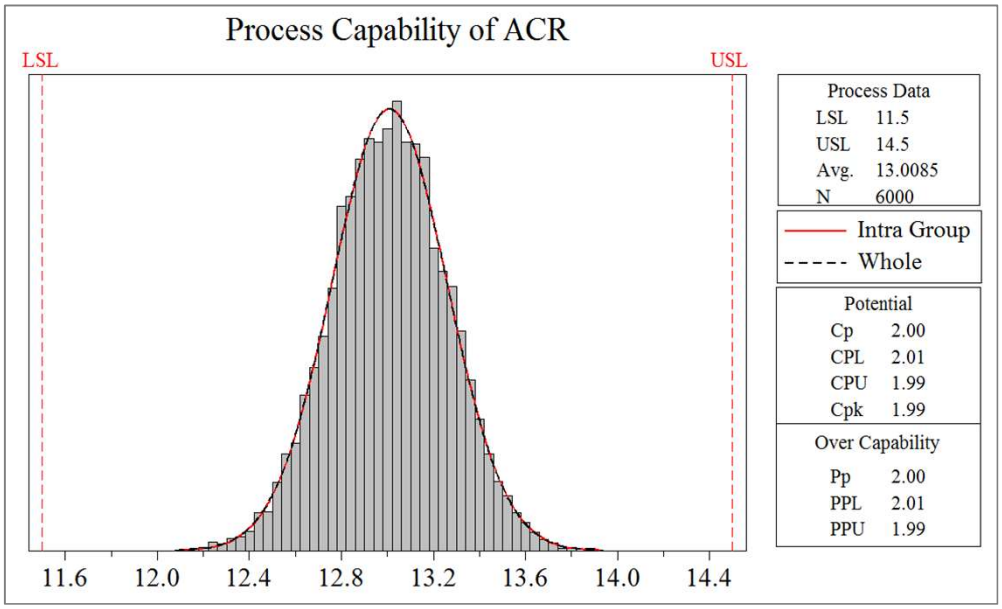
For reference only

NO.	Item		EVE-20P
1	Rated Capacity (0.2C)		> 1950 mAh
2	Nominal Voltage		3.6 V
3	Weight		43±2 g
4	Operating Voltage Range		4.2V~2.5 V
5	Impedance	ACR	11.0~14.5 mΩ
		DCR	20.0~30.0 mΩ
6	Charge Current	Standard	1A
		Max. Continuous	4A
7	Discharge Current	Standard	2A
		Max. Continuous	30A
8	Operating Temperature Range	Charge	0ºC~45ºC
		Discharge	-20ºC~60ºC
9	Dimension	Diameter	18.35±0.10 mm
		Height	65.00±0.15 mm

3. Performance

BenchMarking	EVE
● Capacity : ±25mAh	● Capacity : ±25mAh
● ACIR: ±1.0mΩ	● ACIR: ±1.0mΩ





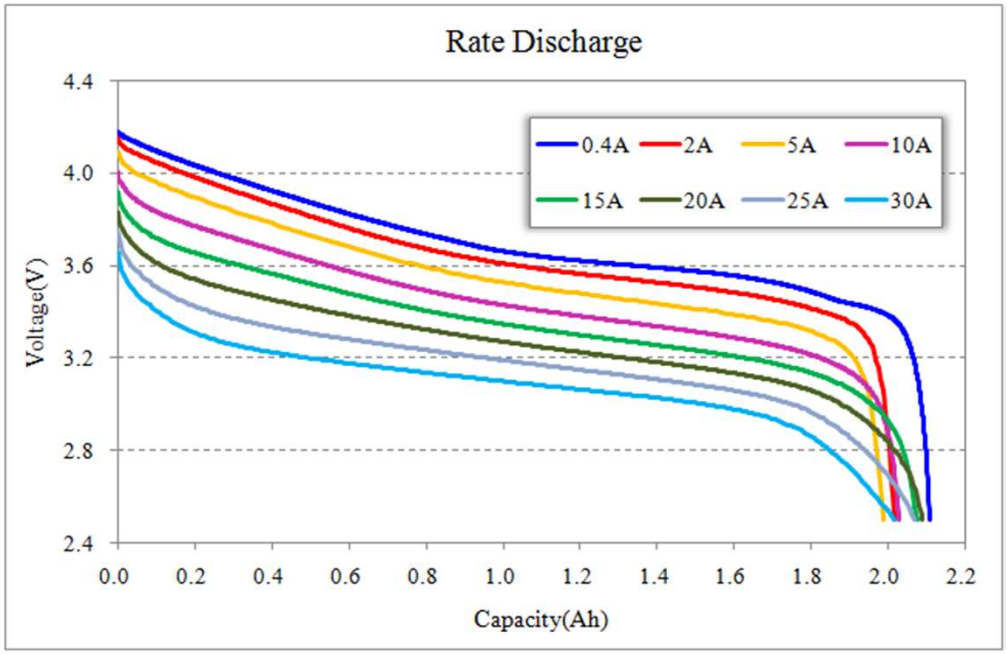
1 Rate Discharge

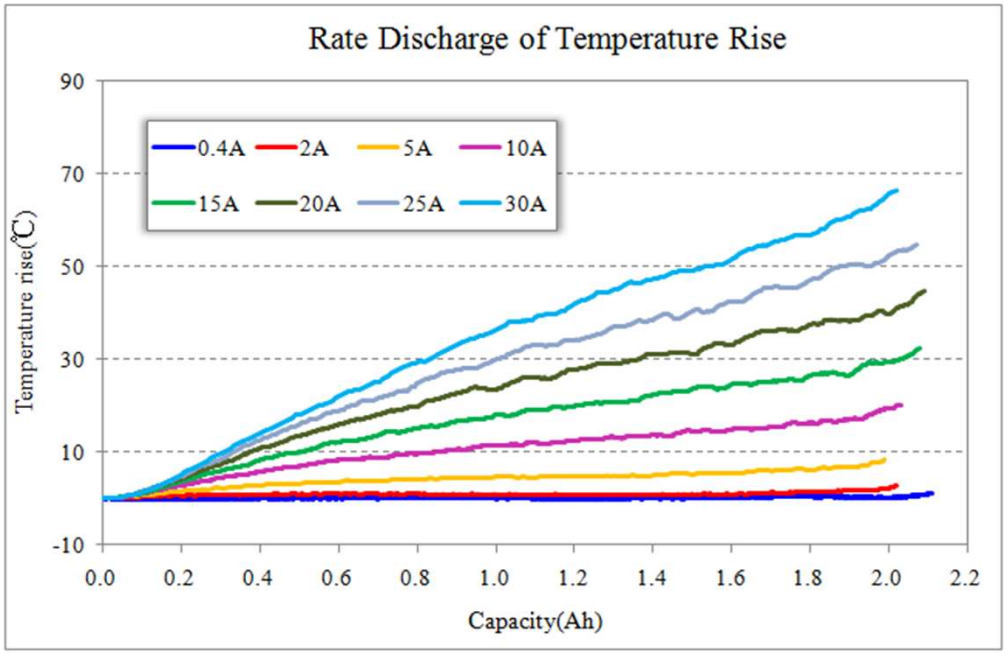
Test Method

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

Step2: Discharge with 0.4A/2A/5A/10A/15A/20A/25A/30A to 2.5V, rest 30min.

Test temperature: 25±2ºC





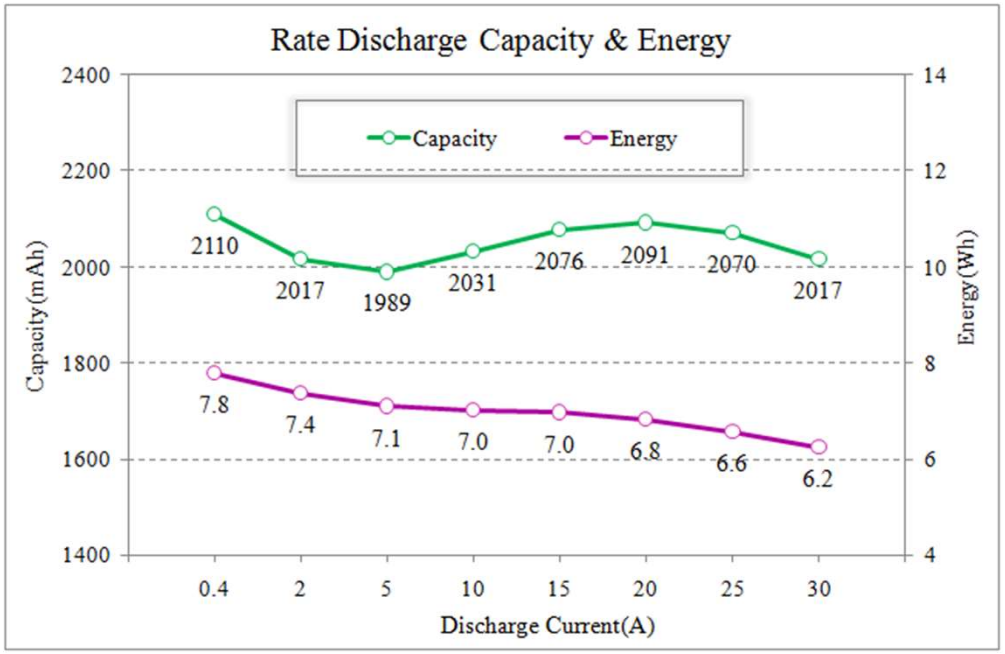
1 Rate Discharge

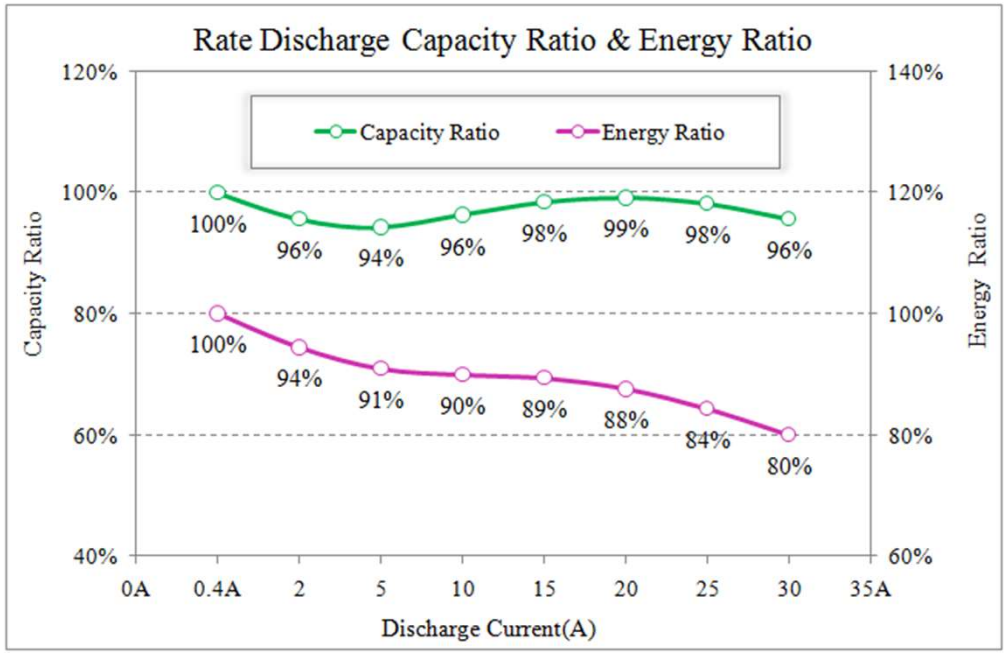
Test Method

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

Step2: Discharge with 0.4A/2A/5A/10A/15A/20A/25A/30A to 2.5V, rest 30min.

Test temperature: 25±2ºC





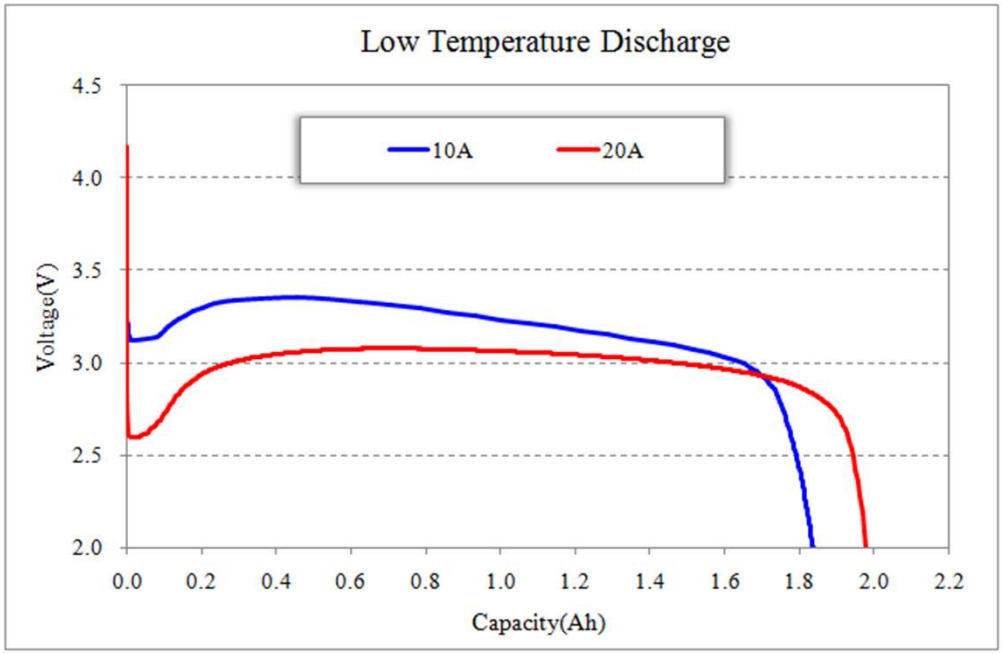
2 Low Temperature Discharge

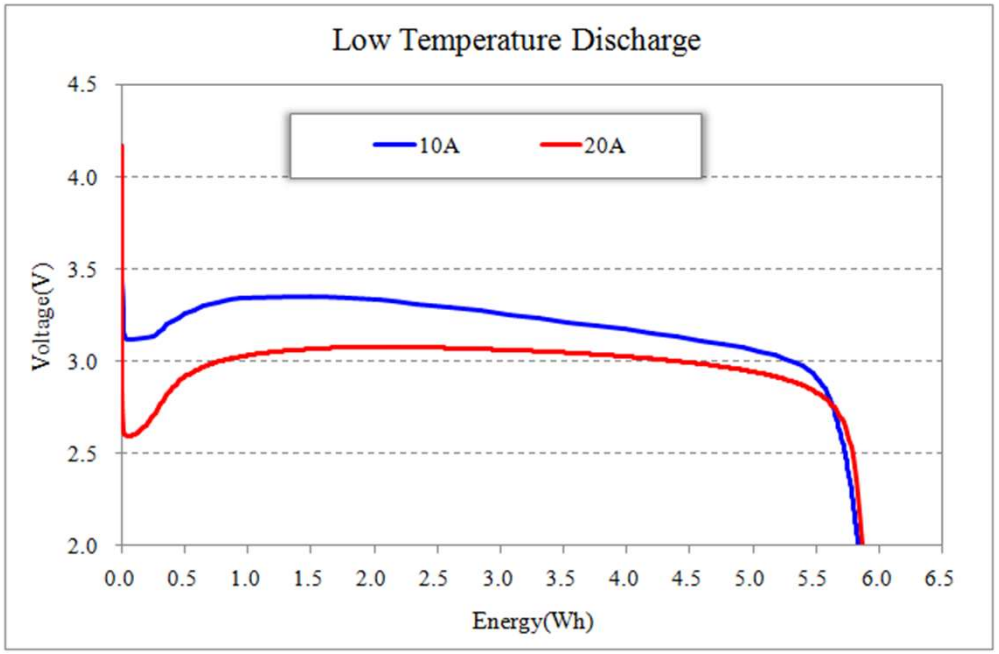
Test Method

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

Step2: -20±2ºC rest 3h, discharge with 20A to 2.0V, rest 30min.

Test temperature: -20±2ºC





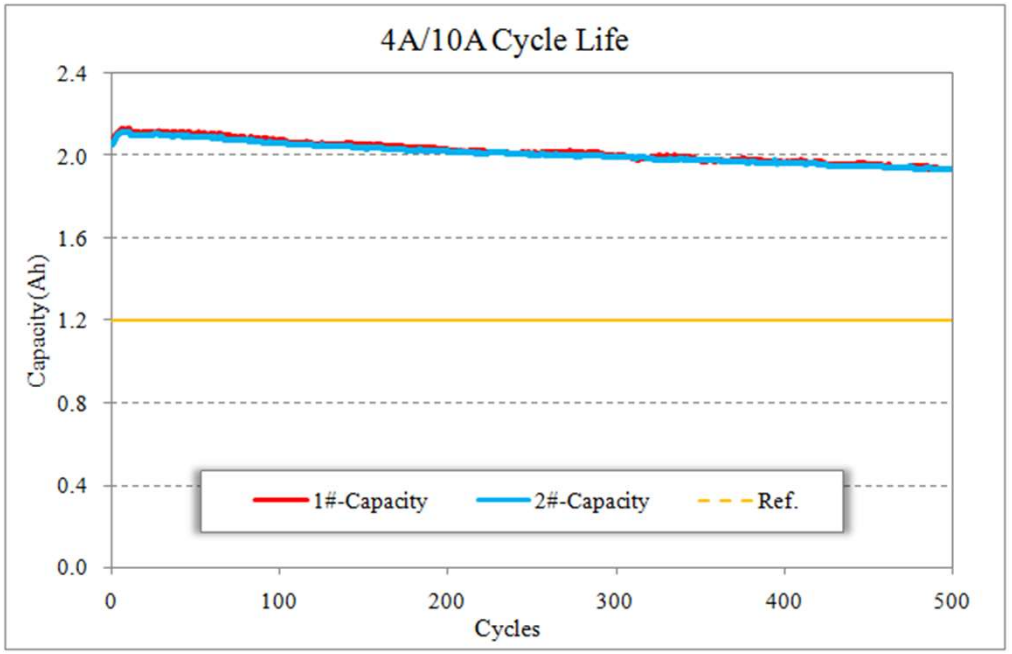
3 RT Cycle Life-4A/10A

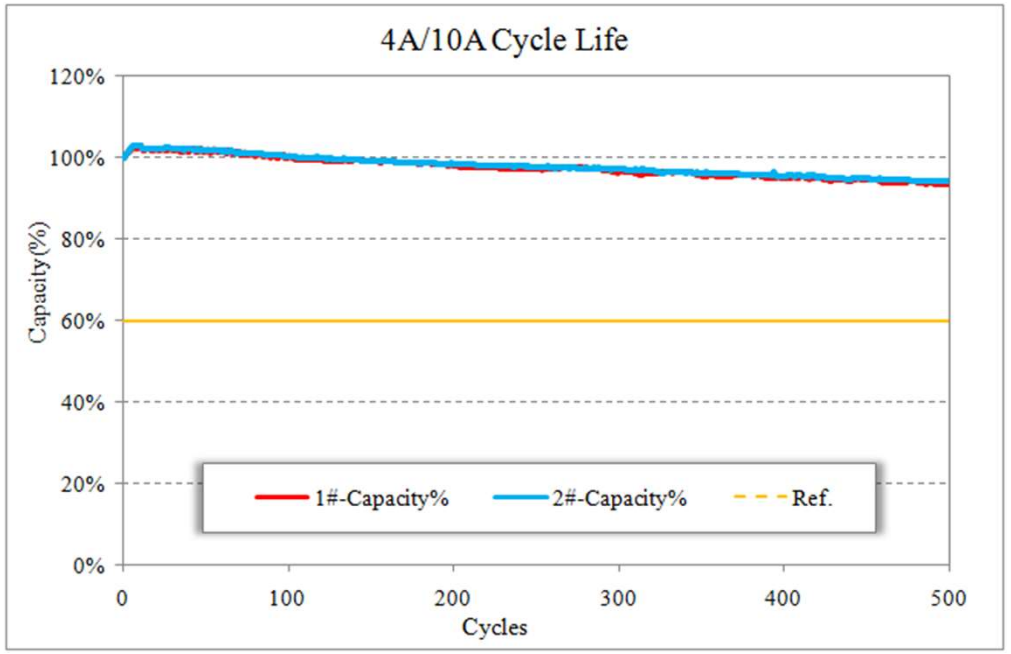
Test Method

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

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

Test temperature: 25±2ºC





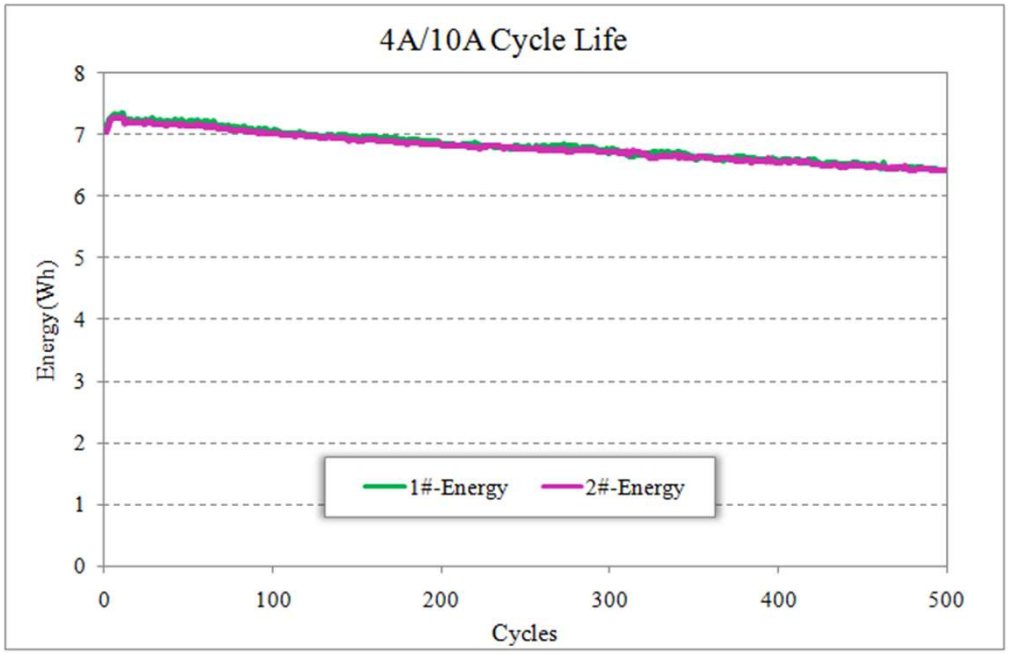
3 RT Cycle Life-4A/10A

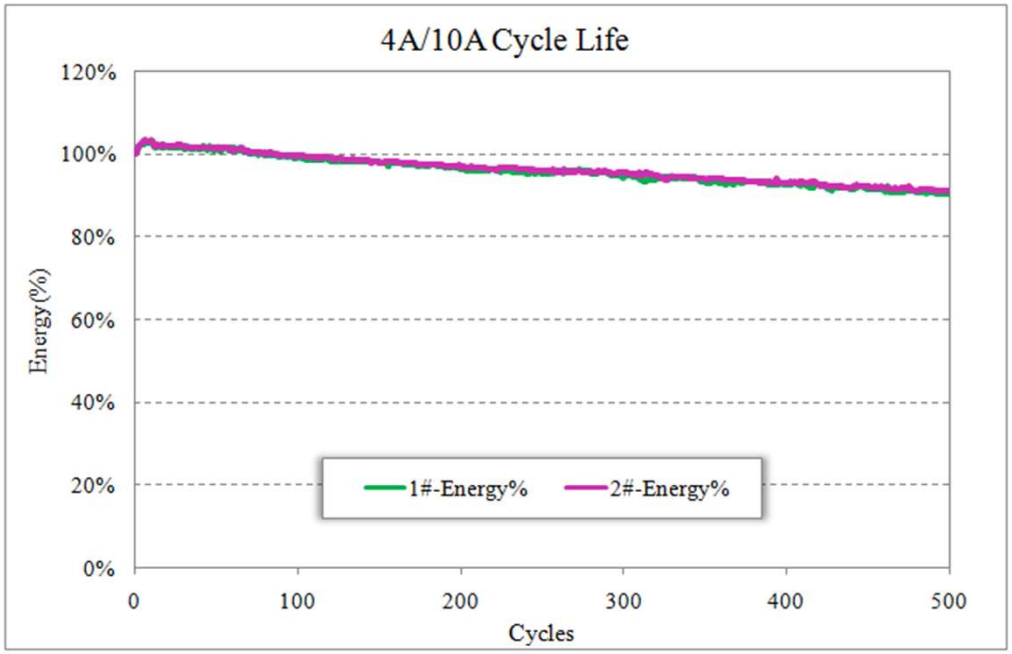
Test Method

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

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

Test temperature: 25±2ºC





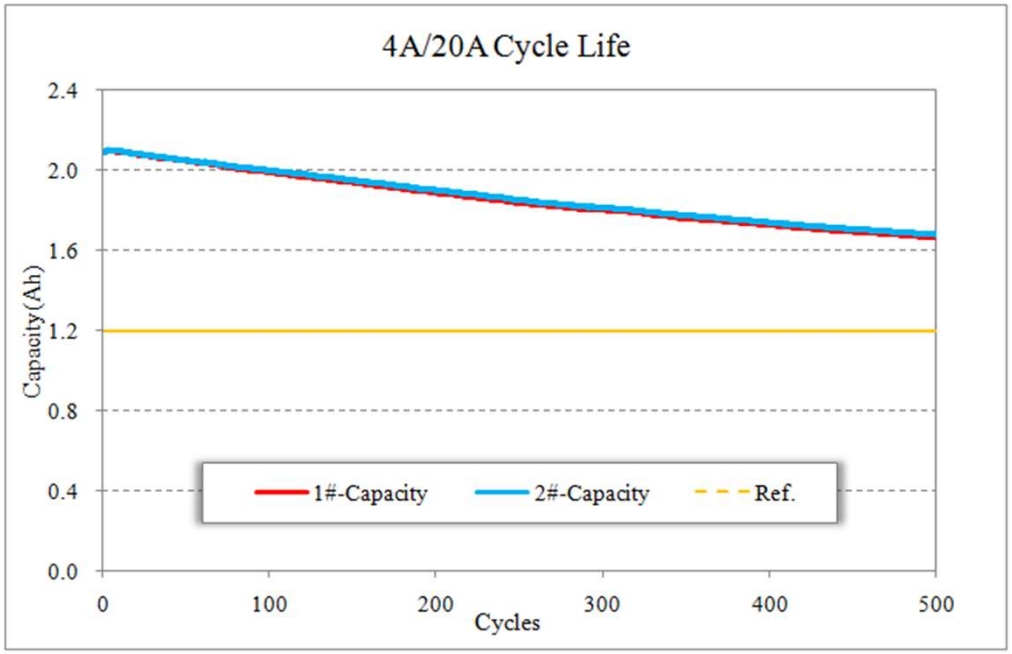
4 RT Cycle Life-4A/20A

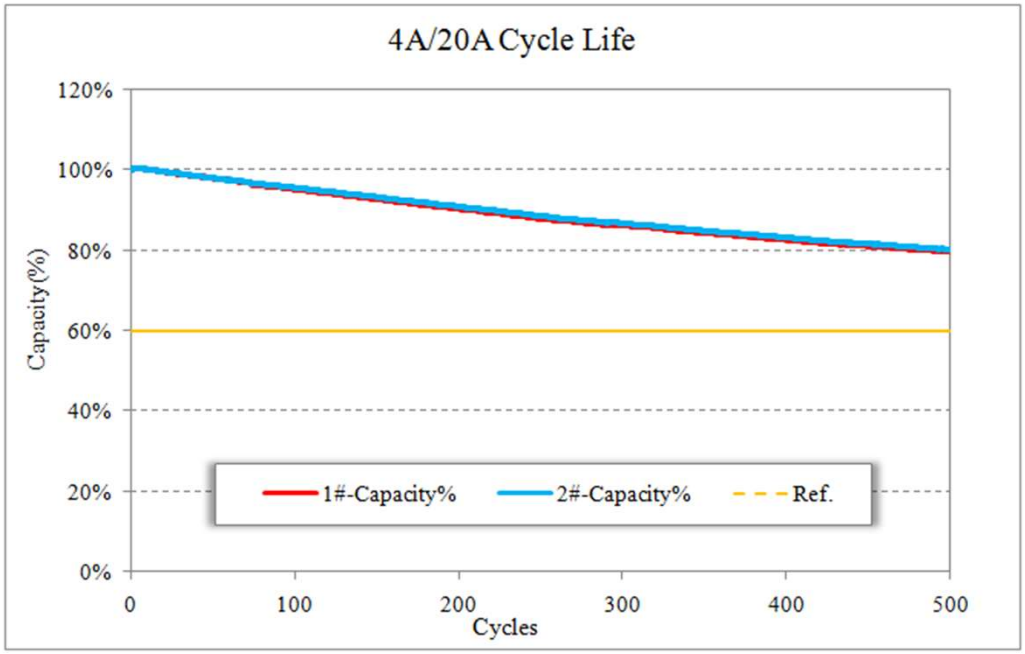
Test Method

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

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

Test temperature: 25±2ºC





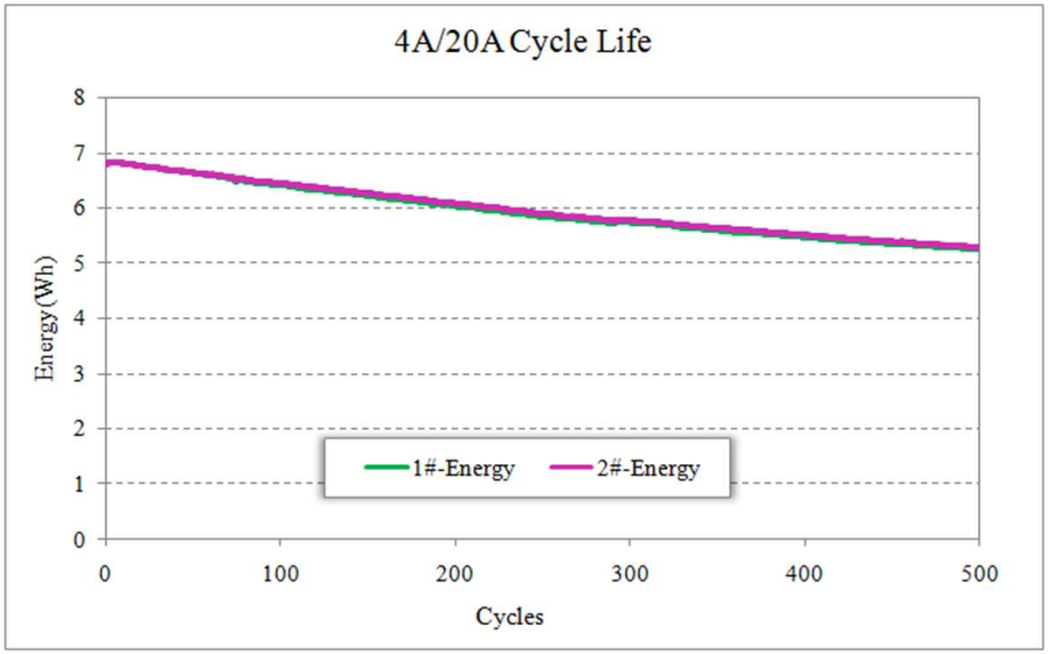
4 RT Cycle Life-4A/20A

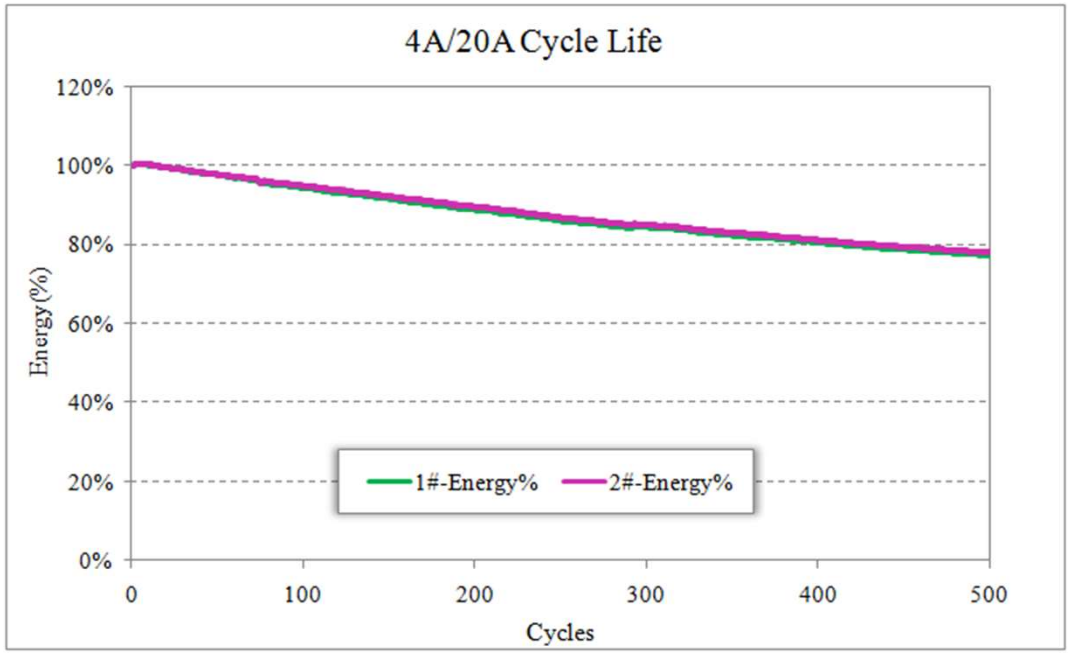
Test Method

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

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

Test temperature: 25±2ºC





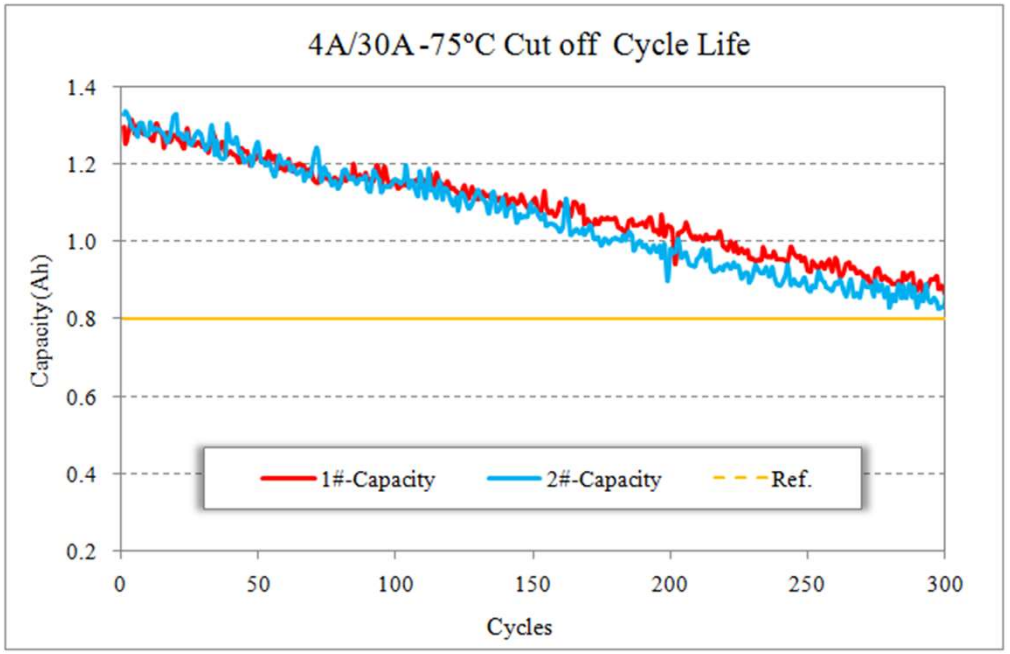
5 RT Cycle Life-4A/30A-75°C Cut off

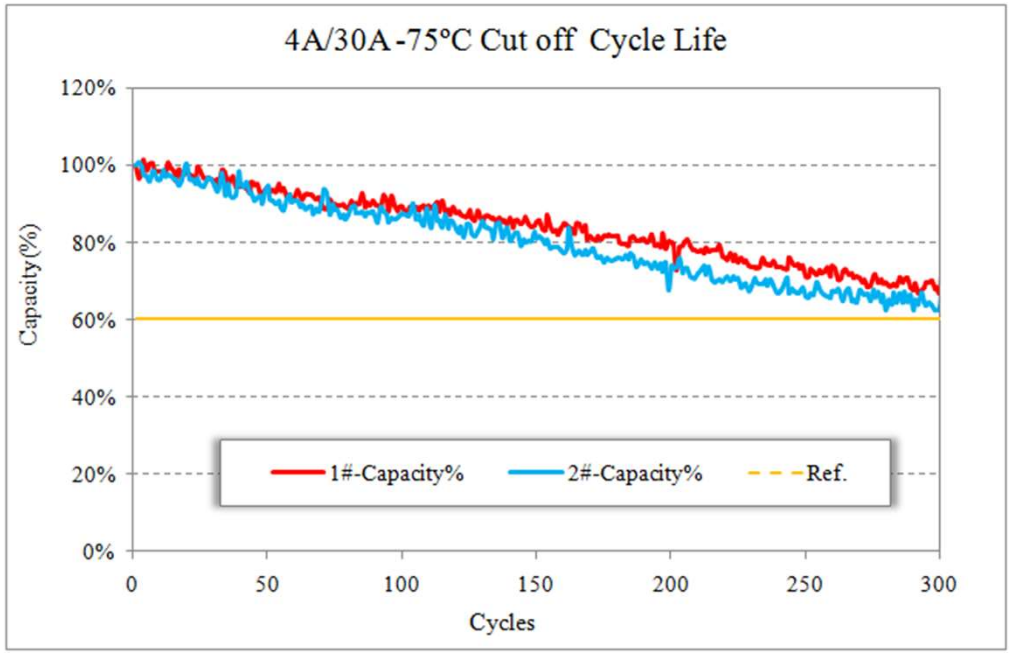
Test Method

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

Step2: Discharge with 30A to 2.5V, 75°C cut off , rest 30min.

Test temperature: 25±2ºC





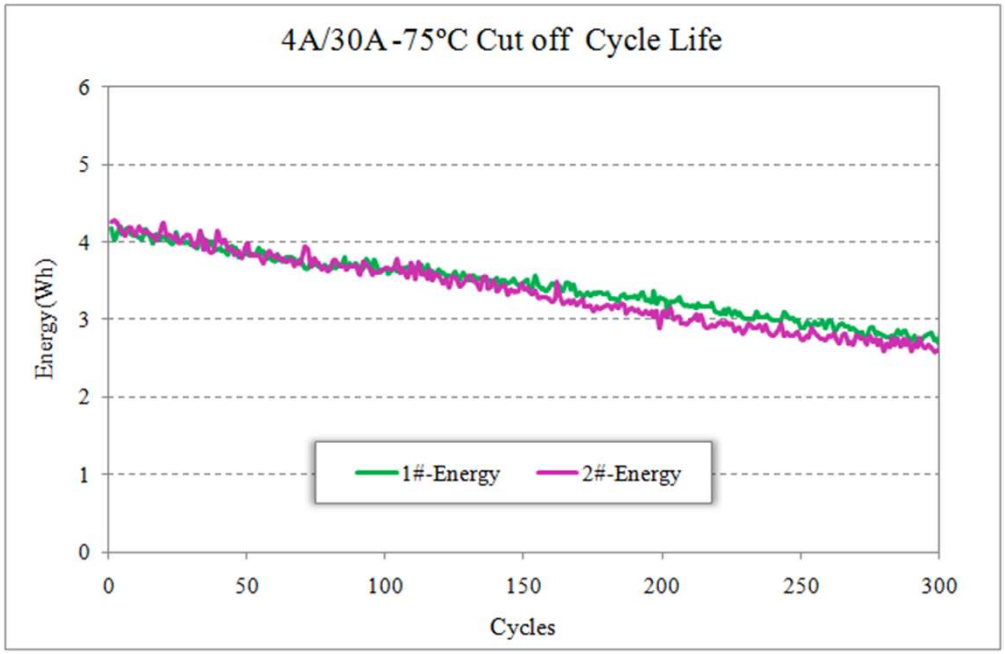
5 RT Cycle Life-4A/30A-75°C Cut off

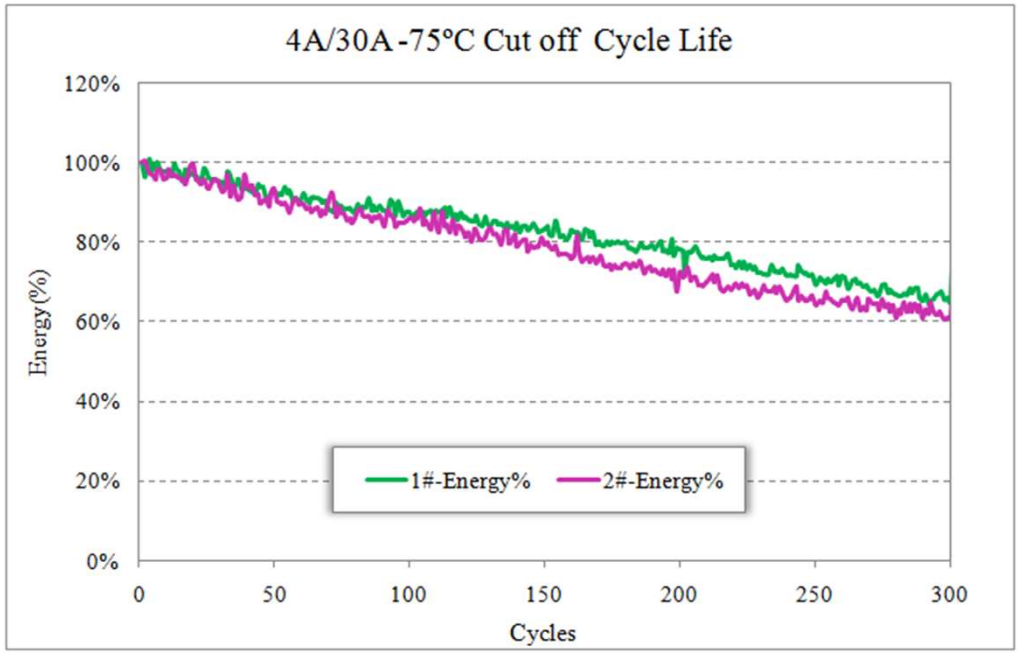
Test Method

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

Step2: Discharge with 30A to 2.5V, 75°C cut off , rest 30min.

Test temperature: 25±2ºC





6 60°C 30D Storage

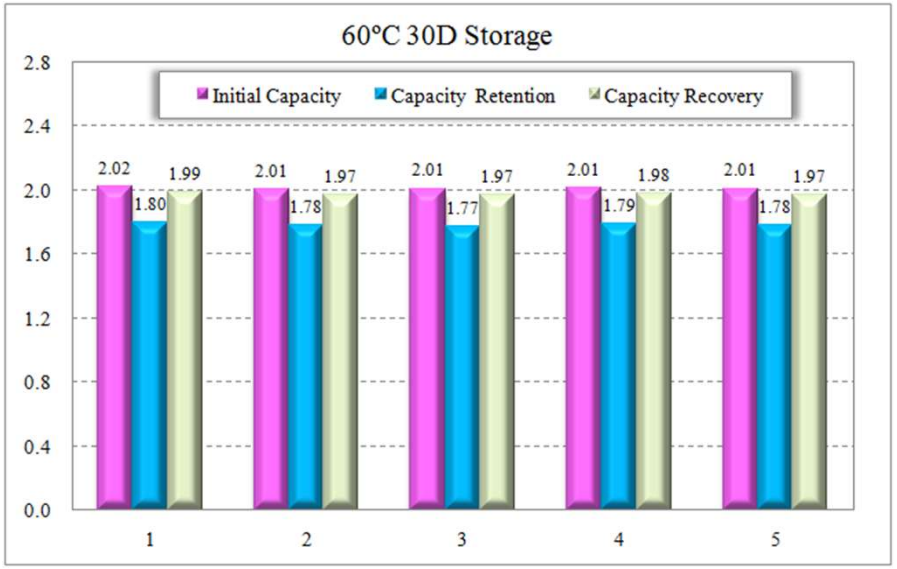
Test Method

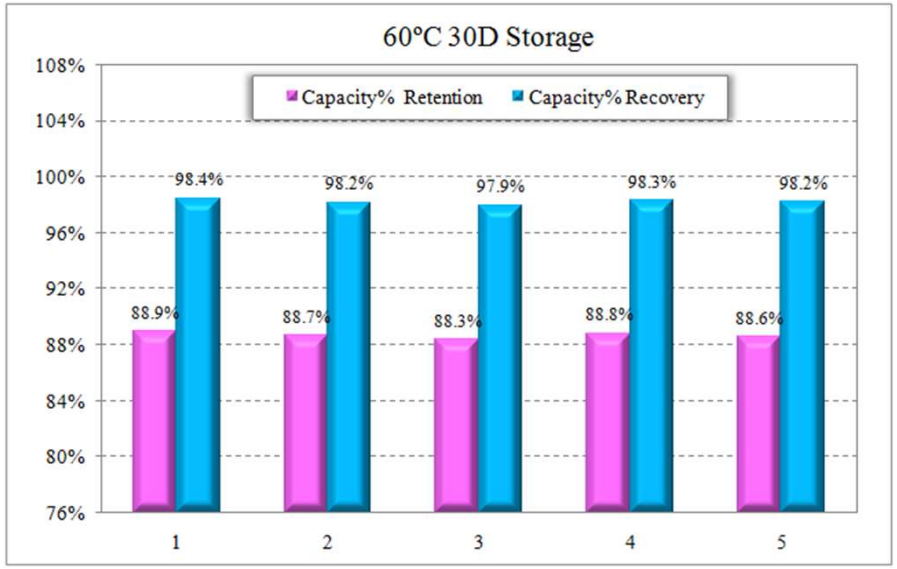
Step1: 4A CC-CV to 4.2V with 0.1A cut-off, rest 10mins.

Step2: Discharge with 2A to 2.5V, record initial capacity.

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

Step4: Discharge with 2A to 2.5V, record retention capacity, repeat step1 to step2 for 3 cycles and record recovery capacity.





7 Short Test @ RT

Test method: 4A CC-CV to 4.2V, 100mA cut off, short with 100, 80, 60, 40, 20, 10mΩ.

Standard: No fire, no explosion.

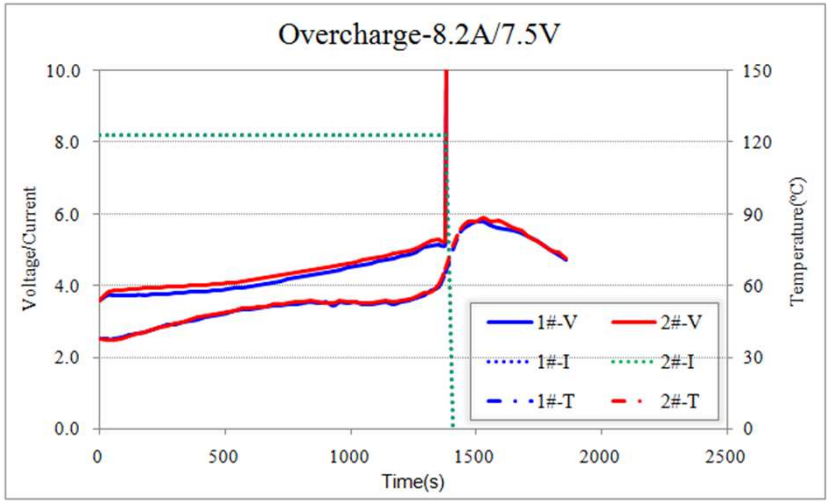
Resistance (mΩ)	No.	Discharge time(s)	Max temp. (°C)	Result					
				Fire	Explosion	Leakage	Smoke	CID	Vent
100mΩ	1#	296	128	No	No	No	No	No	No Open
	2#	292	129	No	No	No	No	No	No Open
80mΩ	1#	249	132	No	No	No	No	No	No Open
	2#	247	128	No	No	No	No	No	No Open
60mΩ	1#	115	132	No	No	No	No	Open	No Open
	2#	115	132	No	No	No	No	Open	No Open
40mΩ	1#	82	132	No	No	No	No	Open	No Open
	2#	83	133	No	No	No	No	Open	No Open
20mΩ	1#	22	123	No	No	No	No	Open	No Open
	2#	23	127	No	No	No	No	Open	No Open
10mΩ	1#	16	127	No	No	No	No	Open	No Open
	2#	17	129	No	No	No	No	Open	No Open

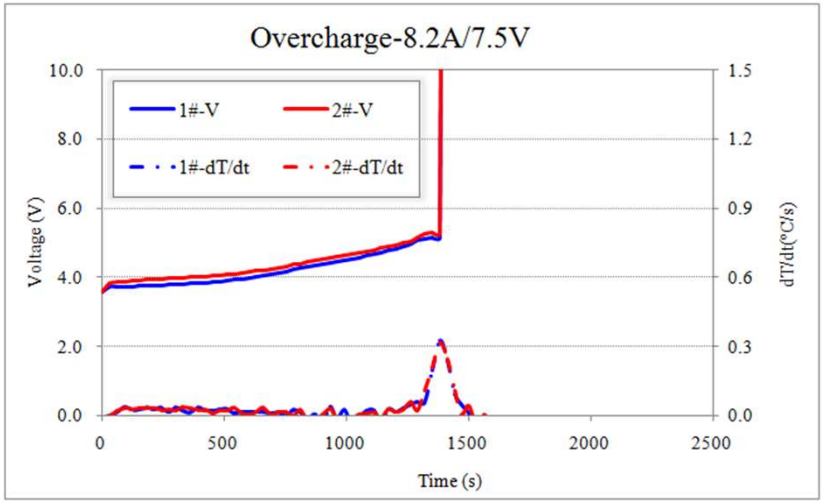
8 Overcharge Test

Test method: The fully discharged cell is charged with 8.2A to 7.5V.

Test temperature: 25±5ºC

Standard: No fire, no explosion.





No.	Phenomenon								Disassembly		Conclusion
	Max. Temperature(ºC)	BreakTime(s)	Charging Capacity(Ah)	Overcharge Capacity	Leakage	Smoke	Fire	Explode	CID	VENT	
1	87.6	1383	3.15	158%	N	N	N	N	Y	N	Pass
2	88.8	1389	3.16	158%	N	N	N	N	Y	N	Pass

10 Other Safety Test

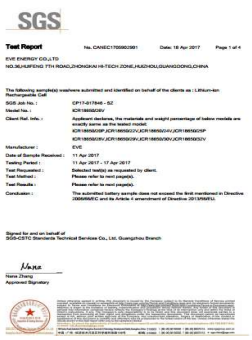
No.	Item	Test Standard	Test Method	Test Number	Standard	Conclusion
1	Force Discharge	IEC62133-2012	A fully discharged cell is subjected to a reverse charge at 1C for 90 minutes	5pcs	No fire , no explosion	Pass
2	Heating Test	UL 1642-2012	A fully charged cell is heated in a gravity convection and stayed at 130±2 ºC for 10min	5pcs	No fire , no explosion	Pass
3	Impact Test	UL 1642-2012	A 9.1 ±0.46-kg weight is to be dropped from a height of 610 ±25 mm onto the fully charged cell.	5pcs	No fire , no explosion	Pass
4	Free fall	IEC 62133-2012	A fully charged cell is dropped 3 times from a height of 1.0m onto a concrete floor .	5pcs	No fire , no explosion	Pass
5	Crush Test	UL 1642-2012	A fully charged cell is to be crushed with its longitudinal axis parallel to the flat surfaces of the crushing apparatus.	5pcs	The samples shall not explode or catch fire	Pass

3. Certification

UN38.3认证

IEC62133认证

UL1642认证



ROHS认证

MSDS认证

THANKS

谢 谢

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