



检测
CNAS L0748



NO.1113100150

检验报告

Test Report

样品名称: 锂离子電池組 Luggie 25.2V 216Wh

Name of Sample: /

委托单位: 自遊實股份有限公司

Consignor: FREBRIDER CORP.



上海化工研究院检测中心

Shanghai Research Institute of Chemical Industry Testing Centre

上海化工研究院检测中心
检验报告

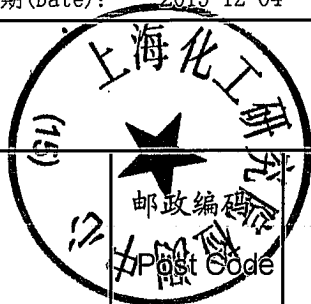
SRICI Testing Centre Test Report

NO. 1113100150

1/5

样品名称 Name of Sample	中文 Chinese	锂离子電池組 Luggie 25.2V 216Wh	
	英文 English	/	
样品编号 Sample No.	1113100150		
委托单位 Consignor	自遊實股份有限公司 FREERIDER CORP.		
生产单位 Manufacturer	新普科技股份有限公司 SIMPLO TECHNOLOGY CO., LTD		
检验方法 Test method	联合国《关于危险货物运输的建议书 试验和标准手册》 ST/SG/AC.10/11/Rev.5/Amend.1 38.3 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5/Amend.1 38.3		
判定标准 Criterion	联合国《关于危险货物运输的建议书 试验和标准手册》 ST/SG/AC.10/11/Rev.5/Amend.1 38.3 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5/Amend.1 38.3		
样品外观 Appearance	黑色塑胶外壳 Black Plastics cement shell		
样品接受日期 Accepted Date	2013-10-31	检测起迄日期 Test Date	2013-11-22 ~ 2013-12-03
检测项目 Test Items	振动;外短路 Vibration, External short circuit		
检验结论 Conclusion	经检验, 该样品振动、外短路符合联合国《关于危险货物运输的建议书 试验和标准手册》 ST/SG/AC.10/11/Rev.5/Amend.1 38.3标准要求。The sample has passed the vibration、 External short circuit of UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria ST/SG/AC.10/11/Rev.5/Amend.1 38.3.		
备注 Comment	可充电锂电池组 Rechargeable Lithium Battery. 生效日期(Date): 2013-12-04		
委托单位地址 Consignor Address	/		

上海
(15)



批准
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上海化工研究院检测中心
检验报告
SRICI Testing Centre Test Report

NO. 1113100150

2/5

序号 No.	检验项目名称 Name of Test Items	标准要求或标准条款号 Standard requirement or The Clause Number of Standard	检测结果 Test Result	本项结论 Conclusion	备注 Remark	
1	振动 Vibration	联合国《关于危险货物运输的建议书 试验和标准手册》ST/SG/AC.10/11/Rev.5/Amend.1 38.3 试验 T.3 UN Manual of Tests and Criteria Section ST/SG/AC.10/11/Rev.5/Amend.1 38.3 Test T.3	见附表 1 See Appendix 1	合格 Passed	/	
2	外短路 External short circuit	联合国《关于危险货物运输的建议书 试验和标准手册》ST/SG/AC.10/11/Rev.5/Amend.1 38.3 试验 T.5 UN Manual of Tests and Criteria Section ST/SG/AC.10/11/Rev.5/Amend.1 38.3 Test T.5	见附表 2 See Appendix 2	合格 Passed	/	
3	以下空白	This space intentionally left blank				
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检验环境条件 Test Environment Condition		环境温度:23℃-24℃;环境湿度:/% Ambient temperature:23℃-24℃;Ambient humidity:/%				
分包检验情况 Subcontracted Test Condition		检验项目 Test Item	/			
		分包实验室 Subcontracted Laboratory	名称 Name	/	邮编 Post Code	/
			地址 Address	/	电话 Tel	/

上海化工研究院检测中心
 检验报告-附表 1

SRICI Testing Centre Test Report—Appendix 1

NO. 1113100150

序号 No.	1	检验项目名称 Name of Test Items		振动 Vibration				
		试验前 Before		试验后 After		质量损失 Mass Loss / %	剩余电压 Residual OCV / %	其他 现象 Other Event
样品 编号 Sample No.	样品状态 Sample Status	质量 Mass /g	开路电压 OCV /V	质量 Mass /g	开路电压 OCV /V			
001	1CYC完全充电 1CYC Fully charged	1832.50	28.77	1832.00	28.71	0.03	99.79	O
002	1CYC完全充电 1CYC Fully charged	1830.47	28.78	1830.01	28.73	0.03	99.83	O
003	1CYC完全充电 1CYC Fully charged	1832.03	28.77	1831.55	28.72	0.03	99.83	O
004	1CYC完全充电 1CYC Fully charged	1832.40	28.77	1831.70	28.73	0.04	99.86	O
005	50CYC完全充电 50CYC Fully charged	1832.20	28.76	1831.78	28.71	0.02	99.83	O
006	50CYC完全充电 50CYC Fully charged	1831.55	28.78	1831.10	28.72	0.02	99.79	O
007	50CYC完全充电 50CYC Fully charged	1831.20	28.77	1830.73	28.72	0.03	99.83	O
008	50CYC完全充电 50CYC Fully charged	1831.03	28.78	1830.57	28.73	0.03	99.83	O
以下空	This space intentionally left blank							

备注: L-泄漏 V-漏气 D-解体 R-破裂 F-起火 O-无泄漏、无漏气、无解体、无破裂、无起火。
 Note: L-Leakage V-Venting D-Disassembly R-Rupture F-Fire O-No Leakage,No Venting,
 No Disassembly,No Rupture & No Fire.

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检验报告 - 附表 2

SRICI Testing Centre Test Report - Appendix 2

NO. 1113100150

序号 No.	2	检验项目名称 Name of Test Items	外短路 External short circuit
样品编号 Sample No.	样品状态 Sample Status	样品表面最高温度 Max. External Temperature /℃	其他现象 Other Event
001	1CYC完全充电 1CYC Fully charged	55.1	O
002	1CYC完全充电 1CYC Fully charged	54.8	O
003	1CYC完全充电 1CYC Fully charged	54.7	O
004	1CYC完全充电 1CYC Fully charged	54.4	O
005	50CYC完全充电 50CYC Fully charged	54.1	O
006	50CYC完全充电 50CYC Fully charged	54.8	O
007	50CYC完全充电 50CYC Fully charged	54.0	O
008	50CYC完全充电 50CYC Fully charged	54.9	O
以下空白	This space intentionally left blank		

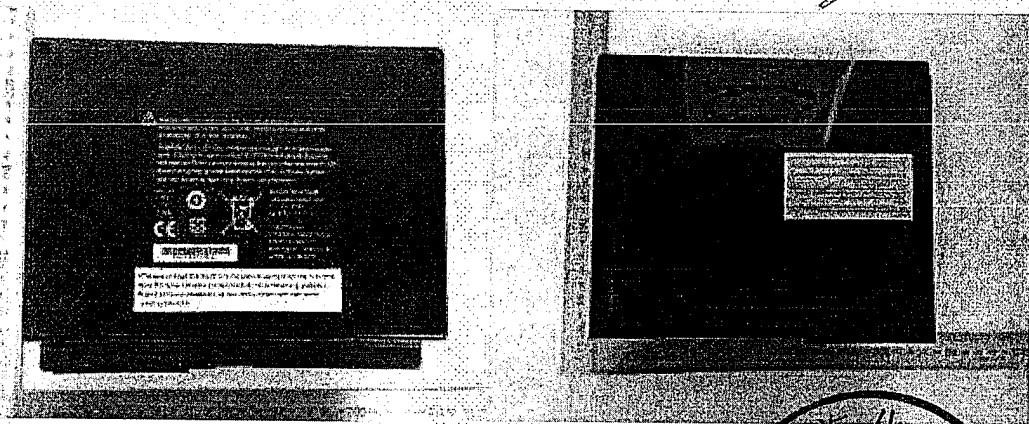
备注: D-解体 R-破裂 F-起火 O-无解体、无起火、无破裂。
Note: D-Disassembly R-Rupture F-Fire O-No Disassembly, No Fire & No Rupture.

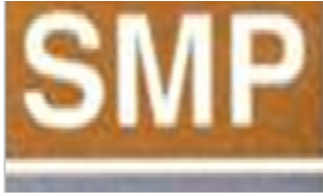
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检验报告-附图
SRICI Testing Centre Test Report—Appendix NO. 1113100150

5/5

Luggie Series
LiCoNiMn battery module
P/N:PA04-A701-C
RATING: 25.2V \Rightarrow 216Wh

研究院检测





新普科技股份有限公司
 新世電子(常熟)有限公司
 新普科技(重慶)有限公司
 兆普電子(上海)有限公司

Control Number : SFRU1310001

UN38.3 Test Report

Recommendations on the TRANSPORT OF DANGEROUS GOODS

(Manual of Tests and Criteria, Fifth revised edition, Amend 1)

Customer: Freerider

Model: Luggie

Rating: 25.2V, 216Wh

Approved By	Checked By	Prepared By

SIMPLO TECHNOLOGY CO., LTD.

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FAX: +886-3-5695931



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TEL: +86-512-52302255

FAX: +86-512-52302277



SIMPLO ELECTRONICS (CHONGQING) ,LTD.

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Page 1 of 7

This test report is valid only to the items, Invalid for separation using.



1. Purpose of the Test :

To test each component cell/battery is of the type proved to meet the requirements in the Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Tests and Criteria, Fifth revised edition, Amend 1.

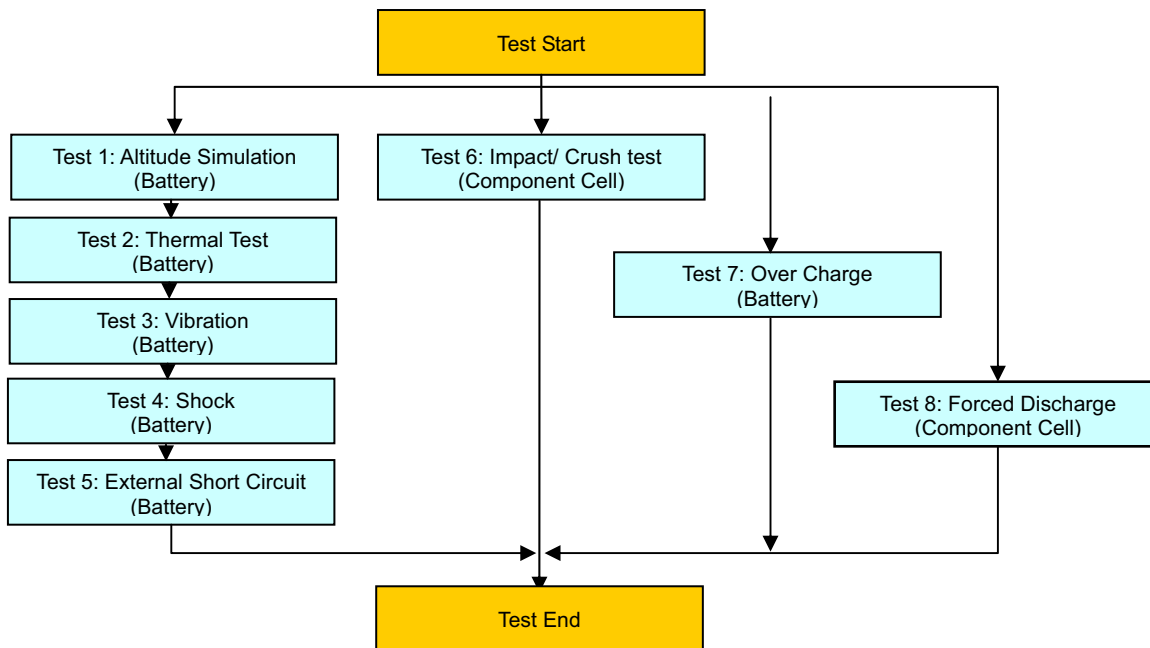
2. Test Quantity :

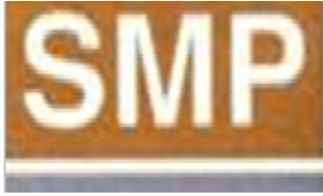
- 2.1 Four batteries, at first cycle, in fully charged states. (for T.1~T.5 & T.7 test)
- 2.2 Four batteries, after fifty cycles ending in fully charged states. (for T.1~T.5 & T.7 test)
- 2.3 Five component cells, at first cycle at 50% of the design rated capacity. (for T.6 test)
- 2.4 Ten component cells, at first cycle in fully discharge states. (for T.8 test)
- 2.5 Ten component cells, after fifty cycles ending in fully discharged states. (for T.8 test)

3. Test procedure :

3.1 All detail related test procedure shall be follow TRANSPORT OF DANGEROUS GOODS, Manual of Tests and Criteria, Fifth revised edition, Amend 1, Section 38.3.

3.2 Test flow shall be follow below statement.





新普科技股份有限公司
新世電子(常熟)有限公司
新普科技(重慶)有限公司
兆普電子(上海)有限公司

Control Number : SFRU1310001

4. Test Result :

4.1 T.1 ~T.4 Test results: Pass

4.1.1 All batteries could meet the requirement, mass loss less than 0.1% and voltage drop less than 10% after the test.

4.1.2 No leakage, no venting, no disassembly, no rupture and no fire.

4.2 T.5 Test result: Pass

4.2.1 All batteries could meet the requirement, external temperature did not exceed 170°C.

4.2.2 All batteries were no disassembly, no rupture and no fire during the test and within six hours after the test.

4.3 T.6 Test results: Pass

4.3.1 All component cells could meet the requirement, external temperature did not exceed 170°C.

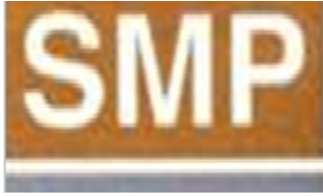
4.3.2 All component cells were no disassembly and no fire during the test and within six hours after the test.

4.4 T.7 Test result: Pass

4.4.1 All batteries could meet no disassembly and no fire during the test and within seven days after the test.

4.5 T.8 Test result: Pass

4.5.1 All component cells could meet no disassembly and no fire during the test and within seven days after the test.



新普科技股份有限公司
 新世電子(常熟)有限公司
 新普科技(重慶)有限公司
 兆普電子(上海)有限公司

Control Number : SFRU1310001

5. Test Equipment :

SMP SIMPLO TECHNOLOGY CO., LTD.

Revised date: 2013-10-14

Address : No. 471, Sec.2, Pa Teh Rd., Hu Kou, Hsin Chu Hsien 303 Taiwan

Date:2013-10-14

TEL: +886-3-5695920; FAX: +886-3-5695931

Project No.: Luggie 7S4P

Test Instruments Reference List

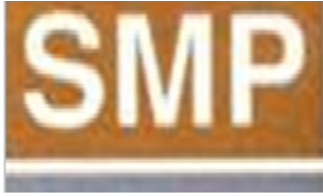
Used	Instrument ID	Instrument Name	Type	Range Used	Manufacturer	Calibration Date Last	Calibration Date Next	Remarks
Pretest								
V	ML-761	Leaming	715C	0~18V 0~8A	SMP	2013/3/28	2014/3/28	
V	ML-762	Leaming	715C	0~18V 0~8A	SMP	2013/3/22	2014/3/22	
	ML-763	Leaming	715C	0~18V 0~8A	SMP	2013/3/22	2014/3/22	
	ML-764	Leaming	715C	0~18V 0~8A	SMP	2013/3/28	2014/3/28	
V	ML-510	Leaming	L750R	0~60V 0~60A	SMP	2013/3/28	2014/3/28	
V	ML-512	Leaming	L750A	0~60V 0~60A	SMP	2013/3/28	2014/3/28	
V	ML-519	Leaming	L750R	0~60V 0~60A	SMP	2013/3/28	2014/3/28	
V	ML-520	Leaming	L750R	0~60V 0~60A	SMP	2013/3/28	2014/3/28	
T.1 Altitude Simulation								
	ML-308	Altitude		Kpa:30~90	HSIN JIANG	2013/8/31	2014/8/31	
V	ML-522	Altitude	SVT-120	Kpa:30~90	HSIN JIANG	2013/8/31	2014/8/31	
V	ML-257	Multimeter	HP 34401A	Note 1	Agilent	2013/3/8	2014/3/8	
V	ML-523	電子秤	MTW-30K	30*0.005Kg		2013/8/31	2014/8/31	
V	ML-550	Data logger	313	15~35 °C; 30~80 %RH	CENTER	2012/10/18	2013/10/18	
T.2 Thermal Test								
V	ML-789	Thermal Shock	GTST-090-86-AW	T:-40 to 120°C	GF	2013/2/18	2014/2/18	
V	ML-257	Multimeter	HP 34401A	note 1	Agilent	2013/3/8	2014/3/8	
V	ML-523	電子秤	MTW-30K	30*0.005Kg		2013/8/31	2014/8/31	
T.3 Vibration								
V	ML-233	Vibration	KD-9636-EM-300F2K-30N80	F:5~2000Hz G:0.2~20G	King Design	2012/10/17	2013/10/17	
V	ML-257	Multimeter	HP 34401A	note 1	Agilent	2013/3/8	2014/3/8	
V	ML-523	電子秤	MTW-30K	30*0.005Kg		2013/8/31	2014/8/31	
V	ML-552	Data logger	313	15~35 °C; 30~80 %RH	CENTER	2012/10/18	2013/10/18	
T.4 Shock								
V	ML-056	Shock	DP-1200-25	G:10~600G	King Design	2012/10/17	2013/10/17	
V	ML-257	Multimeter	HP 34401A	note 1	Agilent	2013/3/8	2014/3/8	
V	ML-523	電子秤	MTW-30K	30*0.005Kg		2013/8/31	2014/8/31	
V	ML-551	Data logger	313	15~35 °C; 30~80 %RH	CENTER	2012/10/18	2013/10/18	
T.5 External Short Circuit								
V	ML-534	mΩ Hitester	3540	1mΩ ~ 30kΩ	HIOKI	2012/10/15	2013/10/15	
V	ML-550	Data logger	313	15~35 °C; 30~80 %RH	CENTER	2012/10/18	2013/10/18	
V	ML-459	Data Acquisition	MX100-E-1D	1-100 Vdc, -50 to 150 °C	Yokogawa	2012/10/25	2013/10/25	
V	ML-480	Data Acquisition	MX100-E-1D	1-100 Vdc, -50 to 150 °C	Yokogawa	2012/10/25	2013/10/25	
V	ML-521	Oven	9031	30~80 °C	YEOW LONG	2012/10/25	2013/10/25	
T.6 Impact (Component cell) Crush								
V	ML-550	Data logger	313	15~35 °C; 30~80 %RH	CENTER	2012/10/18	2013/10/18	
V	ML-553	Crush Tester	BCT-01		Simplo	2012/10/25	2013/10/25	
V	ML-459	Data Acquisition	MX100-E-1D	1-100 Vdc, -50 to 150 °C	Yokogawa	2012/10/25	2013/10/25	
T.7 Overcharge								
V	ML-481	Programmable DC Source	DS10014	1-100Vdc, 0.3-14.4A	MOTECH	2013/6/27	2014/6/27	
V	ML-482	Programmable DC Source	DS10014	1-100Vdc, 0.3-14.4A	MOTECH	2013/6/27	2014/6/27	
V	ML-483	Programmable DC Source	DS10014	1-100Vdc, 0.3-14.4A	MOTECH	2013/6/27	2014/6/27	
V	ML-484	Programmable DC Source	DS10014	1-100Vdc, 0.3-14.4A	MOTECH	2013/6/27	2014/6/27	
V	ML-485	Programmable DC Source	DS10014	1-100Vdc, 0.3-14.4A	MOTECH	2013/6/27	2014/6/27	
V	ML-486	Programmable DC Source	DS10014	1-100Vdc, 0.3-14.4A	MOTECH	2013/6/27	2014/6/27	
	ML-487	Programmable DC Source	DS6024	1-60 Vdc, 0.3-24A	MOTECH	2013/6/27	2014/6/27	
	ML-488	Programmable DC Source	DS6024	1-60 Vdc, 0.3-24A	MOTECH	2013/6/27	2014/6/27	
	ML-489	Programmable DC Source	DS6024	1-60 Vdc, 0.3-24A	MOTECH	2013/6/27	2014/6/27	
	ML-490	Programmable DC Source	DS6024	1-60 Vdc, 0.3-24A	MOTECH	2013/6/27	2014/6/27	
V	ML-550	Data logger	313	15~35 °C; 30~80 %RH	CENTER	2012/10/18	2013/10/18	
V	ML-459	Data Acquisition	MX100-E-1D	1-100 Vdc, -50 to 150 °C	Yokogawa	2012/10/25	2013/10/25	
V	ML-480	Data Acquisition	MX100-E-1D	1-100 Vdc, -50 to 150 °C	Yokogawa	2012/10/25	2013/10/25	
T.8 Forced discharge (Component cell)								
V	ML-132	Electronic Load	3311C	60V,55A, 300W	Prodigit	2013/3/7	2014/3/7	
V	ML-133	Electronic Load	3311C	60V,55A, 300W	Prodigit	2013/3/7	2014/3/7	
	ML-136	Electronic Load	3311C	60V,55A, 300W	Prodigit	2013/3/7	2014/3/7	
	ML-192	Electronic Load	3311C	60V,55A, 300W	Prodigit	2013/3/7	2014/3/7	
	ML-269	Electronic Load	3311C	60V,55A, 300W	Prodigit	2013/3/7	2014/3/7	
V	ML-550	Data logger	313	15~35 °C; 30~80 %RH	CENTER	2012/10/18	2013/10/18	
V	ML-459	Data Acquisition	MX100-E-1D	1-100 Vdc, -50 to 150 °C	Yokogawa	2012/10/25	2013/10/25	
V	ML-480	Data Acquisition	MX100-E-1D	1-100 Vdc, -50 to 150 °C	Yokogawa	2012/10/25	2013/10/25	

Note 1: DC Voltage: 0.1-1000V; AC Voltage: 0.5-700V at 60Hz, 1kHz; Resistance: 10Ω-10MΩ; DC Current: 0.1mA-3A; AC Current: 0.01-3A at 60Hz, 0.01-1A, at 1kHz.

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 新世電子(常熟)有限公司
 新普科技(重慶)有限公司
 兆普電子(上海)有限公司

Control Number : SFRU1310001

6. T.1~T8 detail reports:



Control No.:SFRU1310001 **UN 38.3 Test Datasheet**
 Customer: Freerider Model name: Luggie 754P Test duration:081513~100913 Reviewer:Esmond
 Test Sample identification:

Battery					Component Cell			
Used	Sample No.	Sample state	Used	Sample No.	Sample state	Used	Sample No.	Sample state
V	01~04	1 Cycle, Fully charged	V	05~08	50 Cycle, Fully charged	V	21C~25 C	1 Cycle, 50% charged
		1 Cycle, Fully charged			50 Cycle, Fully charged	V	01C~10 C	1 Cycle, 0% charged
		25Cycle, Fully charged			25Cycle, Fully charged	V	11C~20 C	50 Cycle, 0% charged

T.1 Altitude Simulation Start time: 8/15/2013 15 : 39 Ambient temp.:24.8 °C Operator :Gibson Reviewer:Esmond
 Finish time:8/15/2013 21 : 40

Sample No.: 01					Sample No.: 02				
Before	After	variation	Results	Before	After	variation	Results		
Mass (g) 1825	1825	Mass loss % 0.00%	P	Mass (g) 1825	1825	Mass loss % 0.00%	P		
OCV (V) 28.94	28.88	Remained OCV% 99.79%		OCV (V) 28.94	28.88	Remained OCV% 99.79%			

T.2 Thermal Test Start time: 8/15/2013 21 : 50 Ambient temp.:24.9 °C Operator :Gibson Reviewer:Esmond
 Finish time:8/21/2013 08 : 40

Sample No.: 01					Sample No.: 02				
Before	After	variation	Results	Before	After	variation	Results		
Mass (g) 1825	1825	Mass loss % 0.00%	P	Mass (g) 1825	1825	Mass loss % 0.00%	P		
OCV (V) 28.88	28.34	Remained OCV% 98.82%		OCV (V) 28.88	28.55	Remained OCV% 98.86%			

T.3 Vibration Start time: 8/25/2013 08 : 35 Ambient temp.:25.0 °C Operator :Gibson Reviewer:Esmond
 Finish time:8/28/2013 19 : 10

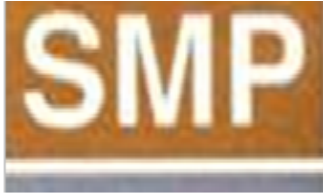
Sample No.: 01					Sample No.: 02				
Before	After	variation	Results	Before	After	variation	Results		
Mass (g) 1825	1825	Mass loss % 0.00%	P	Mass (g) 1825	1825	Mass loss % 0.00%	P		
OCV (V) 28.52	28.51	Remained OCV% 99.96%		OCV (V) 28.52	28.52	Remained OCV% 99.96%			

T.4 Shock Start time: 8/29/2013 08 : 50 Ambient temp.:24.7 °C Operator :Gibson Reviewer:Esmond
 Finish time:8/29/2013 20 : 20

Sample No.: 01					Sample No.: 02				
Before	After	variation	Results	Before	After	variation	Results		
Mass (g) 1825	1825	Mass loss % 0.00%	P	Mass (g) 1825	1825	Mass loss % 0.00%	P		
OCV (V) 28.46	28.46	Remained OCV% 100.00%		OCV (V) 28.47	28.47	Remained OCV% 100.00%			

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Control Number : SFRU1310001



T.5 External Short Circuit

Start time: 9/3/2013 09 : 15
 Finish time:9/16/2013 16 : 40

Ambient temp.:24.3 ℃

Operator :Gibson

Reviewer:Esmond

	Sample No.:01	Sample No.:02	Sample No.:03	Sample No.:04	Sample No.:05	Sample No.:06	Sample No.:7	Sample No.:08
Resistance (<100mΩ)	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
OCV before test/ after short circuit(V)	28.36 0	28.37 0	28.36 0	28.37 0	28.37 0	28.37 0	28.36 0	28.36 0
Max Temp. (< 170℃)	56.2	55.7	56.1	56.0	55.7	55.9	55.8	56.1
Results	P	P	P	P	P	P	P	P

T.6 Impact (Component cell)

Start time: 10/7/2013 09 : 20
 Finish time:10/7/2013 16 : 30

Ambient temp.:24.5 ℃

Operator :Gibson

Reviewer:Esmond

- Impact-Cylindrical cells greater than 20mm in diameter
- Crush- Prismatic, pouch, coin/button cells and cylindrical cells not more than 20mm in diameter

	Sample No.: 21 C	Sample No.: 22 C	Sample No.: 23 C	Sample No.: 24 C	Sample No.: 25 C
OCV before test(V)	3.667	3.668	3.668	3.668	3.669
Max Temp. (< 170℃)	104.3	98.3	97.2	93.9	97.8
Results	P	P	P	P	P

T.7 Overcharge

Start time: 9/24/2013 15 : 39
 Finish time:10/8/2013 09 : 50

Ambient temp.:26.0 ℃

Operator :Gibson

Reviewer:Esmond

	Sample No.: 01	Sample No.: 02	Sample No.: 03	Sample No.: 04	Sample No.: 05	Sample No.: 06	Sample No.: 07	Sample No.: 08
OCV before test(V)	28.04	28.03	28.01	28.01	28.01	28.04	28.02	28.01
Results	P	P	P	P	P	P	P	P

T.8 Forced discharge (Component cell)

Start time: 10/3/2013 08 : 20
 Finish time:10/9/2013 13 : 40

Ambient temp.:24.8 ℃

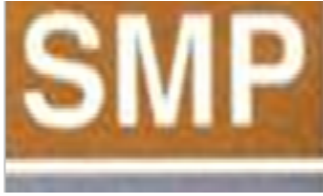
Operator :Gibson

Reviewer:Esmond

	Sample No.: 01 C	Sample No.: 02 C	Sample No.: 03 C	Sample No.: 04 C	Sample No.: 05 C
OCV before test(V)	3.46	3.46	3.46	3.45	3.45
Results	P	P	P	P	P
	Sample No.: 06 C	Sample No.: 07 C	Sample No.: 08 C	Sample No.: 09 C	Sample No.: 10 C
OCV before test(V)	3.45	3.45	3.45	3.46	3.45
Results	P	P	P	P	P
	Sample No.: 11 C	Sample No.: 12 C	Sample No.: 13 C	Sample No.: 14 C	Sample No.: 15 C
OCV before test(V)	3.46	3.46	3.46	3.45	3.45
Results	P	P	P	P	P
	Sample No.: 16 C	Sample No.: 17 C	Sample No.: 18 C	Sample No.: 19 C	Sample No.: 20 C
OCV before test(V)	3.45	3.46	3.45	3.46	3.46
Results	P	P	P	P	P

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7. Test Sample



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