

UL Test Center
ShenZhen Oceansun Battery Co. ,Ltd

UN 38.3 Test Report

User:

Product Name: Polymer Lithium-ion Battery

Submittal unit: Central Research Department of Oceansun

Cell Specification: OSL623766-6.66Wh

Tested by:	JX Zeng, Feb,14,2009
Checked by:	HJ Cao, Feb,14,2009
Reviewed by:	SS Yin, Feb,16,2009

UL Test Center, ShenZhen Oceansun Battery Co. ,Ltd

Test Report

Sample name	Polymer Lithium-ion Battery 623766-6.66Wh		
Submittal unit	UL Test Center, ShenZhen Oceansun Battery Co. ,Ltd		
Test method	United Nations Recommendations on the Transport of Dangerous Goods		
Judgment criteria	United Nations Recommendations on the Transport of Dangerous Goods		
Sample appearance	silver square solid		
Date of test	2009/2/5-2009/2/13	Sample NO.	0902050005
Test items	Altitude Simulation, Thermal Test , Vibration Test , Shock Test , External Short Circuit, Impact Test, Overcharge Test, Forced Discharge Test		
Test conclusion	Samples have passed UN38.3 Test, and the test results proved to be qualified.		

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Test Report

NO.	Test items	Criteria requirement or criteria article NO.	Test result	Conclusion	Remark
1	Altitude Simulation Test	United Nations Recommendations on the Transport of Dangerous Goods (4th) thereafter call " Manual of Tests and Criteria UN38.3(4th)" for short, Test T.1	see attached table 1	pass	/
2	Thermal Test	Manual of Tests and Criteria UN38.3(4th) Test T.2	see attached table 2	pass	/
3	Vibration Test	Manual of Tests and Criteria UN38.3(4th)Test T.3	see attached table 3	pass	/
4	Shock Test	Manual of Tests and Criteria UN38.3(4th)Test T.4	see attached table 4	pass	/
5	External Short Circuit	Manual of Tests and Criteria UN38.3(4th) Test T.5	see attached table 5	pass	/
6	Impact Test	Manual of Tests and Criteria UN38.3(4th) Test T.6	see attached table 6	pass	/
7	Forced Discharge Test	Manual of Tests and Criteria UN38.3(4th) Test T.7	see attached table 7	pass	/
8	Drop Test (Full Carton)	Manual of Tests and Criteria UN38.3(4th) Test T.8	see attached table 8	pass	/
Test environment and condition		Ambience temperature: 25 ±5℃			

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Test Report-attached table 1

NO.	1	Name of test item		Altitude Simulation				
				before test		after test		Mass loss/%
		Mass/g	open-circuit voltage/V	Mass/g	open-circuit voltage/V			
1	first fully charged	33.701	4.177	33.699	4.177	0.00	100.00	O
2	first fully charged	33.710	4.179	33.710	4.178	0.00	99.97	O
3	first fully charged	33.708	4.178	33.707	4.178	0.00	100.00	O
4	first fully charged	33.729	4.176	33.727	4.176	0.00	100.00	O
5	first discharged	33.676		33.675		0.00		O
6	first discharged	33.724		33.724		0.00		O
7	first discharged	33.689		33.689		0.00		O
8	first discharged	33.711		33.711		0.00		O
9	fully charged 50 cycles	33.707	4.179	33.705	4.176	0.00	99.92	O
10	fully charged 50 cycles	33.726	4.178	33.724	4.177	0.00	99.96	O
11	fully charged 50 cycles	33.696	4.177	33.696	4.175	0.00	99.95	O
12	fully charged 50 cycles	33.705	4.175	33.703	4.176	0.00	100.02	O
13	discharged 50 cycles	33.701		33.699		0.00		O
14	discharged 50 cycles	33.723		33.722		0.00		O
15	discharged 50 cycles	33.688		33.687		0.00		O
16	discharged 50 cycles	33.713		33.712		0.00		O

Remark: L-leakage; V- venting ; D-disassembly; R- rupture; F- fire; O-no leakage, no venting, no disassembly, no rupture and no fire.

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Test Report-attached table 2

NO.	2	Name of test item		Thermal Test				
Sample No.	Sample state	before test		after test		Mass loss/%	residual voltage/%	other phenomention
		Mass/g	open-circuit voltage/V	Mass/g	open-circuit voltage/V			
1	first fully charged	33.699	4.175	33.699	4.175	0.00	100.00	O
2	first fully charged	33.696	4.177	33.695	4.175	0.00	99.95	O
3	first fully charged	33.712	4.178	33.711	4.179	0.00	100.02	O
4	first fully charged	33.734	4.181	33.733	4.180	0.00	99.97	O
5	first fully discharged	33.714		33.713		0.00		O
6	first fully discharged	33.738		33.736		0.00		O
7	first fully discharged	33.713		33.713		0.00		O
8	first fully discharged	33.728		33.727		0.00		O
9	fully charged 50 cycles	33.704	4.174	33.703	4.173	0.00	99.96	O
10	fully charged 50 cycles	33.718	4.180	33.718	4.180	0.00	100.00	O
11	fully charged 50 cycles	33.675	4.183	33.674	4.182	0.00	99.96	O
12	fully charged 50 cycles	33.712	4.181	33.712	4.181	0.00	100.00	O
13	discharged 50 cycles	33.696		33.695		0.00		O
14	discharged 50 cycles	33.702		33.702		0.00		O
15	discharged 50 cycles	33.708		33.706		0.00		O
16	discharged 50 cycles	33.704		33.703		0.00		O

Remark: L-leakage; V- venting ; D-disassembly; R- rupture; F- fire; O-no leakage, no venting, no disassembly, no rupture and no fire.

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Test Report-attached table 3

NO.	3	Name of test item		Vibration Test				
Sample No.	Sample state	before test		after test		Mass loss/%	residual voltage/%	other phenomention
		Mass/g	open-circuit voltage/V	Mass/g	open-circuit voltage/V			
1	first fully charged	33.701	4.181	33.699	4.177	0.00	99.90	O
2	first fully charged	33.713	4.174	33.712	4.175	0.00	100.02	O
3	first fully charged	33.669	4.179	33.669	4.179	0.00	99.98	O
4	first fully charged	33.713	4.178	33.712	4.177	0.00	99.97	O
5	first fully discharged	33.678		33.677		0.00		O
6	first discharged	33.682		33.680		0.00		O
7	first discharged	33.698		33.697		0.00		O
8	first discharged	33.714		33.713		0.00		O
9	fully charged 50 cycles	33.736	4.178	33.736	4.178	0.00	99.98	O
10	fully charged 50 cycles	33.696	4.180	33.696	4.180	0.00	99.98	O
11	fully charged 50 cycles	33.713	4.177	33.712	4.176	0.00	99.97	O
12	fully charged 50 cycles	33.684	4.176	33.683	4.175	0.00	99.97	O
13	discharged 50 cycles	33.709		33.707		0.00		O
14	discharged 50 cycles	33.725		33.724		0.00		O
15	discharged 50 cycles	33.728		33.727		0.00		O
16	discharged 50 cycles	33.704		33.703		0.00		O

Remark: L-leakage; V- venting ; D-disassembly; R- rupture; F- fire; O-no leakage, no venting, no disassembly, no rupture and no fire.

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Test Report-attached table 4

NO.	4	Name of test item		Shock Test				
Sample No.	Sample state	before test		after test		Mass loss/%	residual voltage/%	other phenomention
		Mass/g	open-circuit voltage/V	Mass/g	open-circuit voltage/V			
1	first fully charged	33.718	4.180	33.718	4.179	0.00	99.97	O
2	first fully charged	33.694	4.179	33.692	4.177	0.00	99.95	O
3	first fully charged	33.692	4.181	33.691	4.181	0.00	99.98	O
4	first fully charged	33.708	4.177	33.706	4.177	0.00	99.98	O
5	first discharged	33.716		33.715		0.00		O
6	first discharged	33.697		33.697		0.00		O
7	first discharged	33.712		33.710		0.00		O
8	first discharged	33.735		33.733		0.00		O
9	fully charged 50 cycles	33.712	4.181	33.712	4.180	0.00	99.97	O
10	fully charged 50 cycles	33.698	4.180	33.698	4.178	0.00	99.95	O
11	fully charged 50 cycles	33.714	4.180	33.714	4.178	0.00	99.94	O
12	fully charged 50 cycles	33.736	4.178	33.735	4.176	0.00	99.95	O
13	discharged 50 cycles	33.713		33.713		0.00		O
14	discharged 50 cycles	33.728		33.727		0.00		O
15	discharged 50 cycles	33.686		33.684		0.00		O
16	discharged 50 cycles	33.688		33.686		0.00		O

Remark: L-leakage; V- venting ; D-disassembly; R- rupture; F- fire; O-no leakage, no venting, no disassembly, no rupture and no fire.

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Test Report-attached table 5

NO.	5	Name of test item	External Short Circuit
Sample No.	Sample state	External highest temperature/ ℃	other phenomenon
1	first fully charged	83.9	O
2	first fully charged	91.7	O
3	first fully charged	84.8	O
4	first fully charged	86.8	O
5	first discharged	41.8	O
6	first discharged	42.7	O
7	first discharged	42.2	O
8	first discharged	41.0	O
9	fully charged 50 cycles	81.8	O
10	fully charged 50 cycles	84.7	O
11	fully charged 50 cycles	83.2	O
12	fully charged 50 cycles	85.1	O
13	discharged 50 cycles	43.4	O
14	discharged 50 cycles	42.0	O
15	discharged 50 cycles	43.2	O
16	discharged 50 cycles	40.6	O

Remark: D-disassembly; R- rupture; F- fire; O-no disassembly, no rupture and no fire.

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Test Report-attached table 6

NO.	6	Name of test item	Impact Test
Sample No.	Sample state	External Highest Temperature/ °C	other phenomenon
1	first 50% capacity	85.8	O
2	first 50% capacity	93.6	O
3	first 50% capacity	86.7	O
4	first 50% capacity	88.7	O
5	first 50% capacity	86.6	O
6	50 cycles discharged	43.7	O
7	50 cycles discharged	44.6	O
8	50 cycles discharged	44.1	O
9	50 cycles discharged	42.9	O
10	50 cycles discharged	42.5	O

Remark: D-disassembly; F- fire; O-no disassembly, and no fire.

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Test Report-attached table 7

NO.	7	Name of test item	Forced Discharge Test
Sample No.	Sample state	test phenomenon	
1	first fully charged		O
2	first fully charged		O
3	first fully charged		O
4	first fully charged		O
5	first fully discharged		O
6	first discharged		O
7	first discharged		O
8	first discharged		O
9	fully charged 50 cycles		O
10	fully charged 50 cycles		O
11	fully charged 50 cycles		O
12	fully charged 50 cycles		O
13	discharged 50 cycles		O
14	discharged 50 cycles		O
15	discharged 50 cycles		O
16	discharged 50 cycles		O

Remark: D-disassembly; F- fire; O-no disassembly, and no fire.

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Drop Test Report-attached table 8

Test condition:

Charged cell to 4.2V,fill in the carton package,drop from 120cm from X,Y,Z direction,once/side,total 6 drops.

Sample name & NO.	623766-6.66Wh	Storage condition	Room temperature
Test Item	Drop from a height of 1.2 m	Apparatus name	Drop test-bed
Temperature (°C)	22.9	Test basis	United Nations Recommendations on the Transport of Dangerous Goods- Manual of Tests and Criteria
Humidity(%)	47	Test date	2009-2-5
Inner packing	PET box	Outer packing	Carton

NO.	8	Name of test item	Drop Test (Full Carton)
Sample No.	Sample state	test phenomenon	
1	fully charged	no fire;no leakage;cell/carton no damage	
2	fully charged	no fire;no leakage;cell/carton no damage	
3	fully charged	no fire;no leakage;cell/carton no damage	
4	fully charged	no fire;no leakage;cell/carton no damage	
5	fully charged	no fire;no leakage;cell/carton no damage	
6	fully charged	no fire;no leakage;cell/carton no damage	
7	fully charged	no fire;no leakage;cell/carton no damage	
8	fully charged	no fire;no leakage;cell/carton no damage	
9	fully charged	no fire;no leakage;cell/carton no damage	
10	fully charged	no fire;no leakage;cell/carton no damage	

Conclusion: Pass