

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: OSL283562-2.22Wh

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**

Page 1/10

Sample name	Polymer Lithium-ion Battery 283562-2.22Wh		
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.		

UL Test Center, ShenZhen Oceansun Battery Co. ,Ltd

Test Report

Page 2/10

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: 20 ±5℃			

UL Test Center, ShenZhen Oceansun Battery Co. ,Ltd

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	12.701	4.177	12.699	4.177	0.01	100.00	O
2	first fully charged	12.710	4.179	12.710	4.178	0.00	99.97	O
3	first fully charged	12.708	4.178	12.707	4.178	0.00	100.00	O
4	first fully charged	12.729	4.176	12.727	4.176	0.01	100.00	O
5	first discharged	12.676		12.675		0.00		O
6	first discharged	12.724		12.724		0.00		O
7	first discharged	12.689		12.689		0.00		O
8	first discharged	12.711		12.711		0.00		O
9	fully charged 50 cycles	12.707	4.179	12.705	4.176	0.01	99.92	O
10	fully charged 50 cycles	12.726	4.178	12.724	4.177	0.01	99.96	O
11	fully charged 50 cycles	12.696	4.177	12.696	4.175	0.00	99.95	O
12	fully charged 50 cycles	12.705	4.175	12.703	4.176	0.01	100.02	O
13	discharged 50 cycles	12.701		12.699		0.01		O
14	discharged 50 cycles	12.723		12.722		0.00		O
15	discharged 50 cycles	12.688		12.687		0.00		O
16	discharged 50 cycles	12.713		12.712		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.

UL Test Center, ShenZhen Oceansun Battery Co. ,Ltd

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 phenomenon
		Mass/g	open-circuit voltage/V	Mass/g	open-circuit voltage/V			
1	first fully charged	12.699	4.175	12.699	4.175	0.00	100.00	O
2	first fully charged	12.696	4.177	12.695	4.175	0.00	99.95	O
3	first fully charged	12.712	4.178	12.711	4.179	0.00	100.02	O
4	first fully charged	12.734	4.181	12.733	4.180	0.00	99.97	O
5	first fully discharged	12.714		12.713		0.00		O
6	first fully discharged	12.738		12.736		0.01		O
7	first fully discharged	12.713		12.713		0.00		O
8	first fully discharged	12.728		12.727		0.00		O
9	fully charged 50 cycles	12.704	4.174	12.703	4.173	0.00	99.96	O
10	fully charged 50 cycles	12.718	4.180	12.718	4.180	0.00	100.00	O
11	fully charged 50 cycles	12.675	4.183	12.674	4.182	0.00	99.96	O
12	fully charged 50 cycles	12.712	4.181	12.712	4.181	0.00	100.00	O
13	discharged 50 cycles	12.696		12.695		0.00		O
14	discharged 50 cycles	12.702		12.702		0.00		O
15	discharged 50 cycles	12.708		12.706		0.01		O
16	discharged 50 cycles	12.704		12.703		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.

UL Test Center, ShenZhen Oceansun Battery Co. ,Ltd

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 phenom on
		Mass/g	open-circuit voltage/V	Mass/g	open-circuit voltage/V			
1	first fully charged	12.701	4.181	12.699	4.177	0.01	99.90	O
2	first fully charged	12.713	4.174	12.712	4.175	0.00	100.02	O
3	first fully charged	12.669	4.179	12.669	4.179	0.00	99.98	O
4	first fully charged	12.713	4.178	12.712	4.177	0.00	99.97	O
5	first fully discharged	12.678		12.677		0.00		O
6	first discharged	12.682		12.680		0.01		O
7	first discharged	12.698		12.697		0.00		O
8	first discharged	12.714		12.713		0.00		O
9	fully charged 50 cycles	12.736	4.178	12.736	4.178	0.00	99.98	O
10	fully charged 50 cycles	12.696	4.180	12.696	4.180	0.00	99.98	O
11	fully charged 50 cycles	12.713	4.177	12.712	4.176	0.00	99.97	O
12	fully charged 50 cycles	12.684	4.176	12.683	4.175	0.00	99.97	O
13	discharged 50 cycles	12.709		12.707		0.01		O
14	discharged 50 cycles	12.725		12.724		0.00		O
15	discharged 50 cycles	12.728		12.727		0.00		O
16	discharged 50 cycles	12.704		12.703		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.

UL Test Center, ShenZhen Oceansun Battery Co. ,Ltd

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	12.718	4.180	12.718	4.179	0.00	99.97	O
2	first fully charged	12.694	4.179	12.692	4.177	0.01	99.95	O
3	first fully charged	12.692	4.181	12.691	4.181	0.00	99.98	O
4	first fully charged	12.708	4.177	12.706	4.177	0.01	99.98	O
5	first discharged	12.716		12.715		0.00		O
6	first discharged	12.697		12.697		0.00		O
7	first discharged	12.712		12.710		0.01		O
8	first discharged	12.735		12.733		0.01		O
9	fully charged 50 cycles	12.712	4.181	12.712	4.180	0.00	99.97	O
10	fully charged 50 cycles	12.698	4.180	12.698	4.178	0.00	99.95	O
11	fully charged 50 cycles	12.714	4.180	12.714	4.178	0.00	99.94	O
12	fully charged 50 cycles	12.736	4.178	12.735	4.176	0.00	99.95	O
13	discharged 50 cycles	12.713		12.713		0.00		O
14	discharged 50 cycles	12.728		12.727		0.00		O
15	discharged 50 cycles	12.686		12.684		0.01		O
16	discharged 50 cycles	12.688		12.686		0.01		O

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

UL Test Center, ShenZhen Oceansun Battery Co. ,Ltd

Test Report-attached table 5

Page 7/10

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.

UL Test Center, ShenZhen Oceansun Battery Co. ,Ltd

Test Report-attached table 6

NO.	6	Name of test item	Impact Test
Sample No.	Sample state	External Highest Temperature/℃	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.

UL Test Center, ShenZhen Oceansun Battery Co. ,Ltd

Test Report-attached table 7

NO.	8	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.

UL Test Center, ShenZhen Oceansun Battery Co. ,Ltd

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.	283562-2.22Wh	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	2009-1-5
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