

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: OSL6330130-8.88Wh

Tested by:	JX Zeng, Jan,13,2009
Checked by:	HJ Cao,Jan,14,2009
Reviewed by:	SS Yin,Jan,14,2009

UL Test Center, ShenZhen Oceansun Battery Co. ,Ltd

Test Report

Sample name	Polymer Lithium-ion Battery 6030130-8.88Wh		
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	2009/1/5-2009/1/13	Sample NO.	0901050003
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: 20 ±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	44.002	4.178	43.999	4.176	0.01	99.95	O
2	first fully charged	44.011	4.180	44.010	4.178	0.00	99.95	O
3	first fully charged	44.009	4.179	44.007	4.178	0.00	99.98	O
4	first fully charged	44.030	4.177	44.027	4.176	0.01	99.98	O
5	first discharged	43.977		43.975		0.00		O
6	first discharged	44.025		44.024		0.00		O
7	first discharged	43.990		43.989		0.00		O
8	first discharged	44.012		44.011		0.00		O
9	fully charged 50 cycles	44.008	4.180	44.005	4.180	0.01	100.00	O
10	fully charged 50 cycles	44.027	4.179	44.024	4.178	0.01	99.98	O
11	fully charged 50 cycles	43.997	4.178	43.996	4.178	0.00	100.00	O
12	fully charged 50 cycles	44.006	4.176	44.003	4.174	0.01	99.95	O
13	discharged 50 cycles	44.002		43.999		0.01		O
14	discharged 50 cycles	44.024		44.022		0.00		O
15	discharged 50 cycles	43.989		43.987		0.00		O
16	discharged 50 cycles	44.014		44.012		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	44.000	4.176	43.999	4.176	0.00	100.01	O
2	first fully charged	43.997	4.178	43.995	4.175	0.00	99.93	O
3	first fully charged	44.013	4.179	44.011	4.178	0.00	99.98	O
4	first fully charged	44.035	4.182	44.033	4.180	0.00	99.95	O
5	first fully discharged	44.015		44.013		0.00		O
6	first fully discharged	44.039		44.036		0.01		O
7	first fully discharged	44.014		44.013		0.00		O
8	first fully discharged	44.029		44.027		0.00		O
9	fully charged 50 cycles	44.005	4.175	44.003	4.175	0.00	100.00	O
10	fully charged 50 cycles	44.019	4.181	44.018	4.179	0.00	99.95	O
11	fully charged 50 cycles	43.976	4.184	43.974	4.182	0.00	99.95	O
12	fully charged 50 cycles	44.013	4.182	44.012	4.181	0.00	99.98	O
13	discharged 50 cycles	43.997		43.995		0.00		O
14	discharged 50 cycles	44.003		44.002		0.00		O
15	discharged 50 cycles	44.009		44.006		0.01		O
16	discharged 50 cycles	44.005		44.003		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	44.002	4.182	43.999	4.182	0.01	100.00	O
2	first fully charged	44.014	4.175	44.012	4.175	0.00	100.00	O
3	first fully charged	43.970	4.180	43.969	4.180	0.00	100.00	O
4	first fully charged	44.014	4.179	44.012	4.177	0.00	99.95	O
5	first fully discharged	43.979		43.977		0.00		O
6	first discharged	43.983		43.980		0.01		O
7	first discharged	43.999		43.997		0.00		O
8	first discharged	44.015		44.013		0.00		O
9	fully charged 50 cycles	44.037	4.179	44.036	4.179	0.00	100.00	O
10	fully charged 50 cycles	43.997	4.181	43.996	4.178	0.00	99.93	O
11	fully charged 50 cycles	44.014	4.178	44.012	4.176	0.00	99.95	O
12	fully charged 50 cycles	43.985	4.177	43.983	4.177	0.00	100.00	O
13	discharged 50 cycles	44.010		44.007		0.01		O
14	discharged 50 cycles	44.026		44.024		0.00		O
15	discharged 50 cycles	44.029		44.027		0.00		O
16	discharged 50 cycles	44.005		44.003		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	44.019	4.181	44.018	4.179	0.00	99.95	O
2	first fully charged	43.995	4.180	43.992	4.179	0.01	99.98	O
3	first fully charged	43.993	4.182	43.991	4.179	0.00	99.93	O
4	first fully charged	44.009	4.178	44.006	4.176	0.01	99.95	O
5	first discharged	44.017		44.015		0.00		O
6	first discharged	43.998		43.997		0.00		O
7	first discharged	44.013		44.010		0.01		O
8	first discharged	44.036		44.033		0.01		O
9	fully charged 50 cycles	44.013	4.182	44.012	4.180	0.00	99.95	O
10	fully charged 50 cycles	43.999	4.181	43.998	4.178	0.00	99.93	O
11	fully charged 50 cycles	44.015	4.181	44.014	4.181	0.00	100.00	O
12	fully charged 50 cycles	44.037	4.179	44.035	4.176	0.00	99.93	O
13	discharged 50 cycles	44.014		44.013		0.00		O
14	discharged 50 cycles	44.029		44.027		0.00		O
15	discharged 50 cycles	43.987		43.984		0.01		O
16	discharged 50 cycles	43.989		43.986		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.

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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/ °C	other phenomenon
1	first fully charged	103.8	O
2	first fully charged	111.6	O
3	first fully charged	104.7	O
4	first fully charged	106.7	O
5	first discharged	61.7	O
6	first discharged	62.6	O
7	first discharged	62.1	O
8	first discharged	60.9	O
9	fully charged 50 cycles	101.7	O
10	fully charged 50 cycles	104.6	O
11	fully charged 50 cycles	103.1	O
12	fully charged 50 cycles	105.0	O
13	discharged 50 cycles	63.3	O
14	discharged 50 cycles	61.9	O
15	discharged 50 cycles	63.1	O
16	discharged 50 cycles	60.5	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/℃	other phenomenon
1	first 50% capacity	105.6	O
2	first 50% capacity	113.4	O
3	first 50% capacity	106.5	O
4	first 50% capacity	108.5	O
5	first 50% capacity	106.4	O
6	50 cycles discharged	63.5	O
7	50 cycles discharged	64.4	O
8	50 cycles discharged	63.9	O
9	50 cycles discharged	62.7	O
10	50 cycles discharged	62.3	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.	6030130-8.88Wh 0901050003	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