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 : SACU1205002

UN38.3 Test Report

Recommendations on the TRANSPORT OF DANGEROUS GOODS

(Manual of Tests and Criteria, Fifth revised edition)

Customer : ACER
Model : AL12A72
Rating : 14.8V, 2500mAh / 37Wh

Approved By	Checked By	Prepared By
	Stig	Dave

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1. Purpose of the Test：

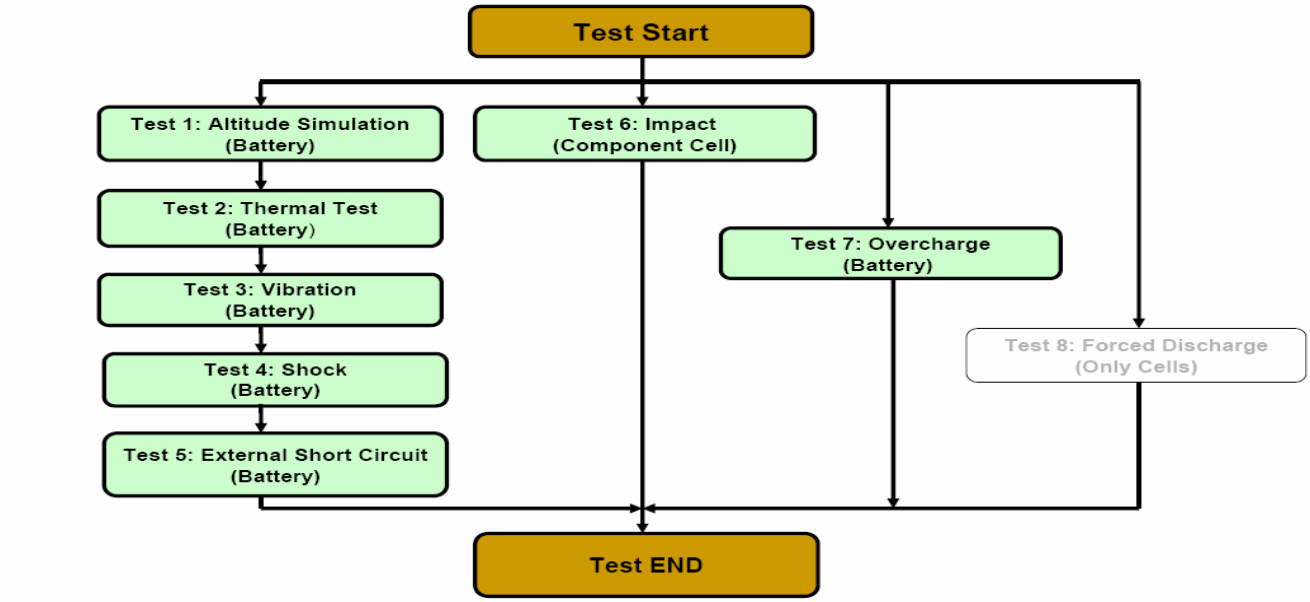
To test each cell/battery is of the type proved to meet the requirements in the Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Tests and Criteria, Fifth revised edition.

2. Test Quantity：

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

3. Test procedure：

4.1 All detail related test procedure shall be follow Standard Operation Procedure of SMP subjected CW01-5916 Rev.2 issue documentation.
4.2 Test flow shall be follow below statement.



4. Test Result：

4.1 T.1 ~T4 Test results: **Pass**

5.1.1 Batteries meet requirement regard mass loss was less then 0.1% and voltage loss less 10% relating original situation.

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

4.2 T.5 Test result: **Pass**

5.2.1 All Batteries can meet requirement subjected external temperature does not exceed 170℃.

5.2.2 All Batteries no disassembly, no rupture and no fire within six hours

4.3 T.6 Test results: **Pass**

5.3.1 All cells can meet requirement subjected external temperature does not exceed 170℃.

5.3.2 All cells no disassembly and no fire within six hours of this test.

4.4 T.7 Test results: **Pass**

5.4.1 All batteries can meet no disassembly and no fire within seven days of the test.
All detail evidence will be confirmed follow appendix described.

5. Test Equipment：

SMP SIMPLO TECHNOLOGY CO., LTD.				Revised date: 2012-03-05			Page:
Address : No. 471, Sec.2, Pa Teh Rd., Hu Kou, Hsin Chu Hsien 303 Taiwan						Date: 2012-05-15	
TEL: +886-3-5695920; FAX: +886-3-5695931				Project No.: AL12A4S1P			
Test Instruments Reference List							
Used	Instrument ID	Instrument Name	Type	Range Used	Manufacturer	Calibration Date_Last	Calibration Date_Next	Remarks
	Pretest							
V	ML-052	Learning	711	0~18V 0~8A	SMP	2011-03-11	2012-03-11	
V	ML-053	Learning	711	0~18V 0~8A	SMP	2011-03-14	2012-03-14	
V	M6-055	Learning	711	0~18V 0~8A	SMP	2011-03-14	2012-03-14	
	T.1 Altitude Simulation							
V	ML-308	Altitude		Kpa:30~90	HSIN JIANG	2011-09-28	2012-09-28	
V	ML-257	Multimeter	HP 34401A	Note 1	Agilent	2012-01-20	2013-01-20	
V	ML-494	Electronic Balance	XS1220M-SCS	1-1000 gf	CHUANHUA	2011-09-28	2012-09-28	
V	ML-550	Data logger	313	15~35 ℃; 30~80 %RH	CENTER	2011-12-21	2012-12-21	
	T.2 Thermal Test							
V	ML-018	Thermal Shock	WSF-602	T:-40 to 120℃	WIT	2011-03-11	2012-03-11	
V	ML-257	Multimeter	HP 34401A	note 1	Agilent	2012-01-20	2013-01-20	
V	ML-494	Electronic Balance	XS1220M-SCS	1-1000 gf	CHUANHUA	2011-09-28	2012-09-28	
	T.3 Vibration							
V	ML-233	Vibration	KD-9636-EM-300F2K-30N80	F:5~2000Hz G:0.2~20G	King Design	2012-01-07	2013-01-07	
V	ML-257	Multimeter	HP 34401A	note 1	Agilent	2012-01-20	2013-01-20	
V	ML-494	Electronic Balance	XS1220M-SCS	1-1000 gf	CHUANHUA	2011-09-28	2012-09-28	
V	ML-552	Data logger	313	15~35 ℃; 30~80 %RH	CENTER	2011-12-21	2012-12-21	
	T.4 Shock							
V	ML-056	Shock	DP-1200-25	G:10~600G	King Design	2012-01-07	2013-01-07	
V	ML-257	Multimeter	HP 34401A	note 1	Agilent	2012-01-20	2013-01-20	
V	ML-494	Electronic Balance	XS1220M-SCS	1-1000 gf	CHUANHUA	2011-09-28	2012-09-28	
V	ML-551	Data logger	313	15~35 ℃; 30~80 %RH	CENTER	2011-12-21	2012-12-21	
	T.5 External Short Circuit							
V	ML-534	mΩ Hitester	3540	1mΩ ~ 30kΩ	HIOKI	2011-12-02	2012-12-02	
V	ML-339	Data Acquisition	MX100-E-1D	1-100 Vdc, -50 to 150℃	Yokogawa	2012-01-13	2013-01-13	
V	ML-010	chamber	WIT IPC-1000	-20 to 150℃	WIT	2011-03-11	2012-03-11	
	T.6 Impact (Component cell)							
V	ML-340	Data Acquisition	MX100-E-1D	1-100 Vdc, -50 to 150℃	Yokogawa	2011-05-26	2012-05-26	
V	ML-076	Impact tester			吉勝	2011-03-11	2012-03-11	
	T.7 Overcharge							
V	ML-139	Power Supply	GC50-30D	0~50V 0.1~30A	LOCK	2012-03-04	2013-03-04	
V	ML-140	Power Supply	GC50-30D	0~50V 0.1~30A	LOCK	2012-03-04	2013-03-04	
V	ML-141	Power Supply	GC50-30D	0~50V 0.1~30A	LOCK	2012-03-04	2013-03-04	
V	ML-142	Power Supply	GC50-30D	0~50V 0.1~30A	LOCK	2012-03-04	2013-03-04	
V	ML-143	Power Supply	GC50-30D	0~50V 0.1~30A	LOCK	2012-03-04	2013-03-04	
V	ML-550	Data logger	313	15~35 ℃; 30~80 %RH	CENTER	2011-12-21	2012-12-21	
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.							

6. T.1~T7 detail reports:

Control No.: SACU-1205002	UN 38.3 Test Datasheet		
Customer:ACER	Model name: AL12A 4S1P	Test duration: 05-12~05-29	Reviewer:Esmond

Test Sample identification:

Used	Sample No.	Sample state	Used	Sample No.	Sample state	Used	Sample No.	Sample state
V	1~4	1 Cycle, Fully charged	V	5~8	50 Cycle, Fully charged			25Cycle, Fully charged
V	9~10	1 Cycle, Fully charged	V	13~16	50 Cycle, Fully charged			25Cycle, Fully charged
V	1~5	1 Cycle, 50% charged	V	6~10	1 Cycle, 50% charged			

T.1 Altitude Simulation — Start time: 5/12/ 08 : 42 — Finish time: 5/12/ 14 : 43 — Ambient temp.: 21.5 ℃ — Operator :Betty — Reviewer:Esmond

Sample No.: 01	Before	After	variation		Results
Mass (g)	234.6	234.6	Mass loss %	0.00%	P
OCV (V)	16.62	16.61	Remained OCV%	99.94%	

Sample No.: 02	Before	After	variation		Results
Mass (g)	234.7	234.7	Mass loss %	0.00%	P
OCV (V)	16.63	16.61	Remained OCV%	99.88%	

Sample No.: 03	Before	After	variation		Results
Mass (g)	234.4	234.4	Mass loss %	0.00%	P
OCV (V)	16.63	16.61	Remained OCV%	99.88%	

Sample No.: 04	Before	After	variation		Results
Mass (g)	234.4	234.4	Mass loss %	0.00%	P
OCV (V)	16.64	16.62	Remained OCV%	99.88%	

Sample No.: 05	Before	After	variation		Results
Mass (g)	234.6	234.6	Mass loss %	0.00%	P
OCV (V)	16.62	16.61	Remained OCV%	99.94%	

Sample No.: 06	Before	After	variation		Results
Mass (g)	234.6	234.6	Mass loss %	0.00%	P
OCV (V)	16.63	16.62	Remained OCV%	99.94%	

Sample No.: 07	Before	After	variation		Results
Mass (g)	234.3	234.3	Mass loss %	0.00%	P
OCV (V)	16.64	8.25	Remained OCV%	49.58%	

Sample No.: 08	Before	After	variation		Results
Mass (g)	234.3	234.3	Mass loss %	0.00%	P
OCV (V)	16.63	16.61	Remained OCV%	99.88%	

T.2 Thermal Test — Start time: 5/12/ 15 : 36 — Finsh time: 5/19/ 11 : 22 — Ambient temp.: 22.3 ℃ — Operator :Betty — Reviewer:Esmond

Sample No.: 01	Before	After	variation		Results
Mass (g)	234.6	234.6	Mass loss %	0.00%	P
OCV (V)	16.61	16.36	Remained OCV%	98.49%	

Sample No.: 02	Before	After	variation		Results
Mass (g)	234.7	234.7	Mass loss %	0.00%	P
OCV (V)	16.61	16.38	Remained OCV%	98.62%	

Sample No.: 03	Before	After	variation		Results
Mass (g)	234.4	234.4	Mass loss %	0.00%	P
OCV (V)	16.61	16.40	Remained OCV%	98.74%	

Sample No.: 04	Before	After	variation		Results
Mass (g)	234.4	234.4	Mass loss %	0.00%	P
OCV (V)	16.62	16.37	Remained OCV%	98.50%	

Sample No.: 05	Before	After	variation		Results
Mass (g)	234.6	234.6	Mass loss %	0.00%	P
OCV (V)	16.61	16.38	Remained OCV%	98.62%	

Sample No.: 06	Before	After	variation		Results
Mass (g)	234.6	234.6	Mass loss %	0.00%	P
OCV (V)	16.62	16.41	Remained OCV%	98.74%	

Sample No.: 07	Before	After	variation		Results
Mass (g)	234.3	234.3	Mass loss %	0.00%	P
OCV (V)	8.25	8.04	Remained OCV%	97.45%	

Sample No.: 08	Before	After	variation		Results
Mass (g)	234.3	234.3	Mass loss %	0.00%	P
OCV (V)	16.61	16.35	Remained OCV%	98.43%	

T.3 Vibration — Start time: 5/19/ 14 : 17 — Finsh time: 5/20/ 16 : 52 — Ambient temp.: 22.3 ℃ — Operator :Betty — Reviewer:Esmond

Sample No.: 01	Before	After	variation		Results
Mass (g)	234.6	234.6	Mass loss %	0.00%	P
OCV (V)	16.36	16.32	Remained OCV%	99.76%	

Sample No.: 02	Before	After	variation		Results
Mass (g)	234.7	234.7	Mass loss %	0.00%	P
OCV (V)	16.38	16.35	Remained OCV%	99.82%	

Sample No.: 03	Before	After	variation		Results
Mass (g)	234.4	234.4	Mass loss %	0.00%	P
OCV (V)	16.40	16.37	Remained OCV%	99.82%	

Sample No.: 04	Before	After	variation		Results
Mass (g)	234.4	234.4	Mass loss %	0.00%	P
OCV (V)	16.37	16.35	Remained OCV%	99.88%	

Sample No.: 05	Before	After	variation		Results
Mass (g)	234.6	234.6	Mass loss %	0.00%	P
OCV (V)	16.38	16.35	Remained OCV%	99.82%	

Sample No.: 06	Before	After	variation		Results
Mass (g)	234.6	234.6	Mass loss %	0.00%	P
OCV (V)	16.41	16.39	Remained OCV%	99.88%	

Sample No.: 07	Before	After	variation		Results
Mass (g)	234.3	234.3	Mass loss %	0.00%	P
OCV (V)	8.04	8.01	Remained OCV%	99.63%	

Sample No.: 08	Before	After	variation		Results
Mass (g)	234.3	234.3	Mass loss %	0.00%	P
OCV (V)	16.35	16.30	Remained OCV%	99.69%	

T.4 Shock

Start time: 5/21/08 : 32
Finsh time: 5/22/11 : 27
Ambient temp.: 21.6 ℃
Operator :Betty
Reviewer:Esmond

Sample No.: 01	Before	After	variation		Results
Mass (g)	234.6	234.6	Mass loss %	0.00%	P
OCV (V)	16.32	16.29	Remained OCV%	99.82%	

Sample No.: 02	Before	After	variation		Results
Mass (g)	234.7	234.7	Mass loss %	0.00%	P
OCV (V)	16.35	16.32	Remained OCV%	99.82%	

Sample No.: 03	Before	After	variation		Results
Mass (g)	234.4	234.4	Mass loss %	0.00%	P
OCV (V)	16.37	16.35	Remained OCV%	99.88%	

Sample No.: 04	Before	After	variation		Results
Mass (g)	234.4	234.4	Mass loss %	0.00%	P
OCV (V)	16.35	16.33	Remained OCV%	99.88%	

Sample No.: 05	Before	After	variation		Results
Mass (g)	234.6	234.6	Mass loss %	0.00%	P
OCV (V)	16.35	16.33	Remained OCV%	99.88%	

Sample No.: 06	Before	After	variation		Results
Mass (g)	234.6	234.6	Mass loss %	0.00%	P
OCV (V)	16.39	16.36	Remained OCV%	99.82%	

Sample No.: 07	Before	After	variation		Results
Mass (g)	234.3	234.3	Mass loss %	0.00%	P
OCV (V)	8.01	7.98	Remained OCV%	99.63%	

Sample No.: 08	Before	After	variation		Results
Mass (g)	234.3	234.3	Mass loss %	0.00%	P
OCV (V)	16.30	16.27	Remained OCV%	99.82%	

T.5 External Short Circuit

Start time: 5/22/13 : 52
Finsh time: 5/23/17 : 31
Ambient temp.: 20.3 ℃
Operator :Betty
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	
Resistance (<100mΩ)	56.8		57.6		55.9		56.1		56.3		53.8		55.4		55.3	
OCV before test/ after short circuit(V)	16.63	0.00	16.63	0.00	16.63	0.01	16.62	0.01	8.25	0.01	16.63	0.00	16.63	0.00	16.61	0.01
Max Temp. (< 170℃)	55.1		55.2		55.2		55.0		55.2		55.1		55.2		55.1	
Results	P		P		P		P		P		P		P		P	

T.6 Impact (Component cell)

Start time: 5/9/03 : 21
Finsh time: 5/10/04 : 33
Ambient temp.: 28.6 ℃
Operator :Betty
Reviewer:Esmond

	Sample No.: 01	Sample No.: 02	Sample No.: 03	Sample No.: 04	Sample No.: 05
OCV before test(V)	3.80	3.79	3.80	3.80	3.79
Max Temp. (< 170℃)	110.5	108.7	108.4	106.7	105.4
Results	P	P	P	P	P
	Sample No.: 06	Sample No.: 07	Sample No.: 08	Sample No.: 09	Sample No.: 10
OCV before test(V)	3.79	3.80	3.79	3.79	3.80
Max Temp. (< 170℃)	93.6	96.3	91.7	92.8	93.2
Results	P	P	P	P	P

T.7 Overcharge

Start time: 5/17/10 : 21
Finsh time: 5/18/16 : 26
Ambient temp.: 27.3 ℃
Operator :Betty
Reviewer:Esmond

	Sample No.: 09	Sample No.: 10	Sample No.: 11	Sample No.: 12	Sample No.: 13	Sample No.: 14	Sample No.: 15	Sample No.: 16
OCV before test(V)	16.62	16.6	16.63	16.64	16.63	16.63	16.62	16.62
Results	P	P	P	P	P	P	P	P

7. Equipment for test: