

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 : SLEU1108002

## UN38.3 Test Report

### Recommendations on the TRANSPORT OF DANGEROUS GOODS

(Manual of Tests and Criteria, Fifth revised edition)

**Customer : Lenovo**


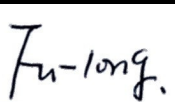

**Model : L11M6F01**

**ASM P/N 45N1052**

**FRU P/N 45N1053**

**LC P/N 121500053**

**Rating : 11.1V , 62Wh / 5.6Ah**

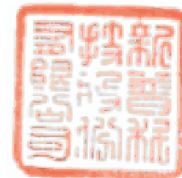
Approved By	Checked By	Prepared By
		

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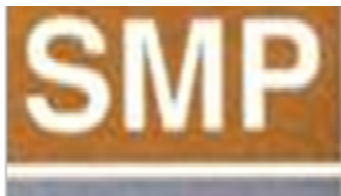
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## 1. Purpose of the Test :

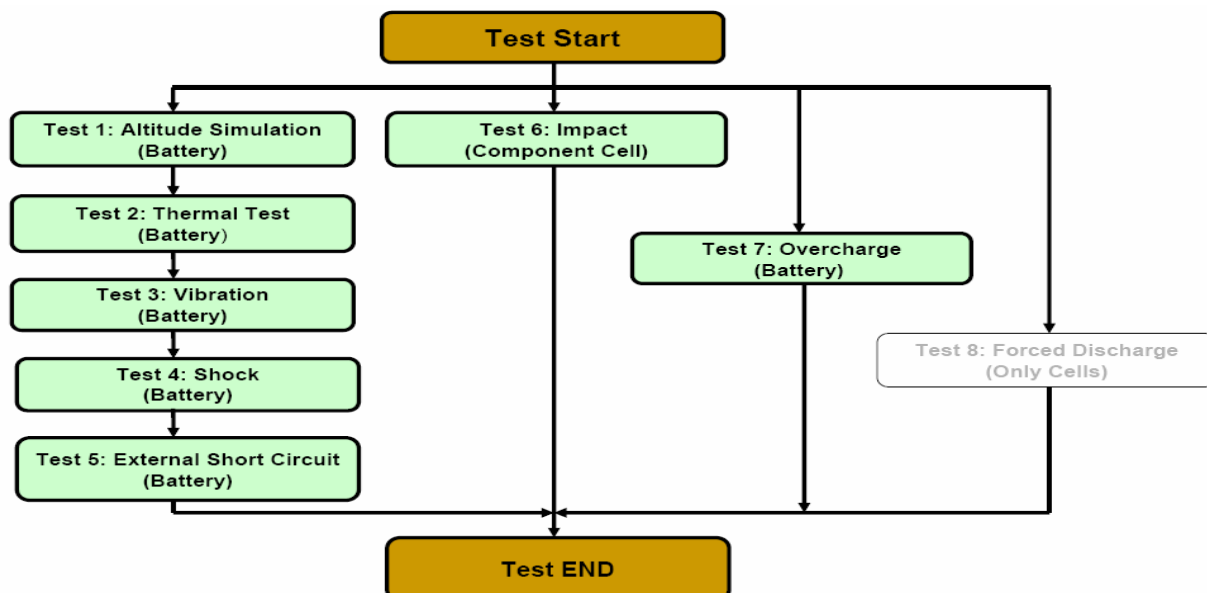
To test each cell/battery is of the type proved to meet the requirements in the Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Tests and Criteria, Fifth revised edition.

## 2. Test Quantity :

- 2.1 Four batteries, at first cycle, in fully charged states. (for T.1~T.5 test)
- 2.2 Four batteries, after fifty cycles ending in fully charged states. (for T.1~T.5 test)
- 2.3 Five component cells, at first cycle at 50% of the design rated capacity. (for T.6 test)
- 2.4 Four batteries, at first cycle, in fully charged states. (for T.7 test)
- 2.5 Four batteries, after fifty cycles ending in fully charged states. (for T.7 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.
- 3.2 Test flow shall be follow below statement.





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#### 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 results: **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.

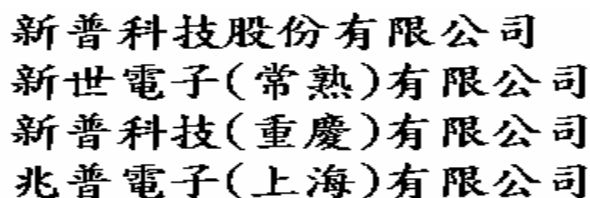
##### 4.3 T.6 Test results: **Pass**

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.

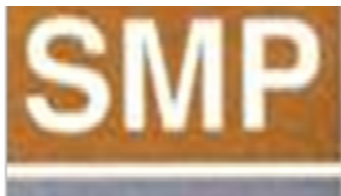


## 5. Test Equipment :

Project No.: L11M6F01 3S2P

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## 6. T.1~T.7 Detail Reports:

Control No.: SLEU-1108002

UN 38.3 Test Datasheet

Customer: Lenovo

Model name: L11M6F01 3S2P

Test duration: 2011/07/19~2011/08/11

Reviewer: Esmond

Test Sample Identification:

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			25Cycle, Fully charged
V	09~12	1 Cycle, Fully charged	V	13~16	50 Cycle, Fully charged			25Cycle, Fully charged
V	01C~05C	1 Cycle, 50% charged			1 Cycle, 50% charged			

### T.1 Altitude Simulation

Start time: 08 / 02 / 08 : 11  
Finish time: 08 / 02 / 14 : 26

Ambient temp.: 24.5 °C

Operator: Betty

Reviewer: Esmond

Sample No.: 01					Sample No.: 05				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	317.5	317.5	Mass loss %	0.00%	Mass (g)	317.6	317.6	Mass loss %	0.00%
OCV (V)	12.84	12.84	Remained OCV%	100.00%	OCV (V)	12.85	12.85	Remained OCV%	100.00%
Sample No.: 02					Sample No.: 06				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	317.6	317.6	Mass loss %	0.00%	Mass (g)	317.5	317.4	Mass loss %	0.03%
OCV (V)	12.84	12.84	Remained OCV%	100.00%	OCV (V)	12.85	12.85	Remained OCV%	100.00%
Sample No.: 03					Sample No.: 07				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	317.5	317.5	Mass loss %	0.00%	Mass (g)	317.5	317.5	Mass loss %	0.00%
OCV (V)	12.85	12.85	Remained OCV%	100.00%	OCV (V)	12.85	12.85	Remained OCV%	100.00%
Sample No.: 04					Sample No.: 08				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	317.5	317.5	Mass loss %	0.00%	Mass (g)	317.6	317.6	Mass loss %	0.00%
OCV (V)	12.84	12.84	Remained OCV%	100.00%	OCV (V)	12.84	12.84	Remained OCV%	100.00%

### T.2 Thermal Test

Start time: 08 / 02 / 15 : 32  
Finish time: 08 / 09 / 10 : 42

Ambient temp.: 25.3 °C

Operator: Betty

Reviewer: Esmond

Sample No.: 01					Sample No.: 05				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	317.5	317.4	Mass loss %	0.03%	Mass (g)	317.6	317.5	Mass loss %	0.03%
OCV (V)	12.84	12.62	Remained OCV%	98.31%	OCV (V)	12.85	12.62	Remained OCV%	98.24%
Sample No.: 02					Sample No.: 06				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	317.6	317.6	Mass loss %	0.00%	Mass (g)	317.4	317.3	Mass loss %	0.03%
OCV (V)	12.84	12.66	Remained OCV%	98.60%	OCV (V)	12.85	12.64	Remained OCV%	98.37%
Sample No.: 03					Sample No.: 07				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	317.5	317.4	Mass loss %	0.03%	Mass (g)	317.5	317.4	Mass loss %	0.03%
OCV (V)	12.85	12.67	Remained OCV%	98.60%	OCV (V)	12.85	12.63	Remained OCV%	98.31%
Sample No.: 04					Sample No.: 08				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	317.5	317.5	Mass loss %	0.00%	Mass (g)	317.6	317.5	Mass loss %	0.03%
OCV (V)	12.84	12.63	Remained OCV%	98.36%	OCV (V)	12.84	12.62	Remained OCV%	98.26%

### T.3 Vibration

Start time: 08 / 09 / 11 : 41  
Finish time: 08 / 10 / 10 : 16

Ambient temp.: 24.6 °C

Operator: Betty

Reviewer: Esmond

Sample No.: 01					Sample No.: 05				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	317.4	317.4	Mass loss %	0.00%	Mass (g)	317.5	317.5	Mass loss %	0.00%
OCV (V)	12.62	12.62	Remained OCV%	100.00%	OCV (V)	12.62	12.61	Remained OCV%	99.92%
Sample No.: 02					Sample No.: 06				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	317.6	317.6	Mass loss %	0.00%	Mass (g)	317.3	317.3	Mass loss %	0.00%
OCV (V)	12.66	12.66	Remained OCV%	100.00%	OCV (V)	12.64	12.64	Remained OCV%	100.00%
Sample No.: 03					Sample No.: 07				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	317.4	317.4	Mass loss %	0.00%	Mass (g)	317.4	317.3	Mass loss %	0.03%
OCV (V)	12.67	12.66	Remained OCV%	99.92%	OCV (V)	12.63	12.63	Remained OCV%	100.00%
Sample No.: 04					Sample No.: 08				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	317.5	317.4	Mass loss %	0.03%	Mass (g)	317.5	317.5	Mass loss %	0.00%
OCV (V)	12.63	12.62	Remained OCV%	99.92%	OCV (V)	12.62	12.61	Remained OCV%	99.92%

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T.4 Shock		Start time: 08 / 10 / 13 : 34	Ambient temp.: 25.1 ℃	Operator: Betty	Reviewer: Esmond
		Finish time: 08 / 10 / 15 : 42			
Sample No.: 01					
	Before	After	Variation	Results	
Mass (g)	317.4	317.3	Mass loss % 0.03%	P	
OCV (V)	12.62	12.62	Remained OCV% 100.00%		
Sample No.: 02					
	Before	After	Variation	Results	
Mass (g)	317.6	317.6	Mass loss % 0.00%	P	
OCV (V)	12.66	12.65	Remained OCV% 99.92%		
Sample No.: 03					
	Before	After	Variation	Results	
Mass (g)	317.4	317.4	Mass loss % 0.00%	P	
OCV (V)	12.66	12.66	Remained OCV% 100.00%		
Sample No.: 04					
	Before	After	Variation	Results	
Mass (g)	317.4	317.4	Mass loss % 0.00%	P	
OCV (V)	12.62	12.61	Remained OCV% 99.92%		
Sample No.: 05					
	Before	After	Variation	Results	
Mass (g)	317.5	317.4	Mass loss % 0.03%	P	
OCV (V)	12.61	12.61	Remained OCV% 100.00%		
Sample No.: 06					
	Before	After	Variation	Results	
Mass (g)	317.3	317.2	Mass loss % 0.03%	P	
OCV (V)	12.64	12.64	Remained OCV% 100.00%		
Sample No.: 07					
	Before	After	Variation	Results	
Mass (g)	317.3	317.2	Mass loss % 0.03%	P	
OCV (V)	12.63	12.62	Remained OCV% 99.92%		
Sample No.: 08					
	Before	After	Variation	Results	
Mass (g)	317.5	317.4	Mass loss % 0.03%	P	
OCV (V)	12.61	12.61	Remained OCV% 100.00%		

T.5 External Short Circuit		Start time: 08 / 10 / 17 : 12		Ambient temp.: 25.2 ℃		Operator: Betty		Reviewer: Esmond	
		Finish time: 08 / 11 / 09 : 27							
	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)	56.3	54.4	55.6	52.9	57.7	56.4	52.8	55.5	
OCV before test after short circuit(V)	12.62 0.00	12.65 0.00	12.66 0.00	12.61 0.00	12.61 0.00	12.64 0.00	12.62 0.00	12.61 0.00	
Max Temp. (< 170℃)	55.1	55.0	55.2	55.1	55.2	55.2	55.2	55.0	
Results	P	P	P	P	P	P	P	P	

T.6 Impact (Component cell)		Start time: 08 / 03 / 17 : 18	Ambient temp.: 25.3 ℃	Operator: Betty	Reviewer: Esmond
		Finish time: 08 / 04 / 09 : 42			
	Sample No.: 01C	Sample No.: 02C	Sample No.: 03C	Sample No.: 04C	Sample No.: 05C
OCV before test(V)	3.72	3.73	3.73	3.72	3.73
Max Temp. (< 170℃)	96.7	98.4	99.3	95.6	94.3
Results	P	P	P	P	P
	Sample No.: 06C	Sample No.: 07C	Sample No.: 08C	Sample No.: 09C	Sample No.: 10C
OCV before test(V)					
Max Temp. (< 170℃)					
Results					

T.7 Overcharge		Start time: 08 / 03 / 09 : 51		Ambient temp.: 24.3 ℃		Operator: Betty		Reviewer: Esmond	
		Finish time: 08 / 11 / 16 : 27							
	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)	12.84	12.84	12.84	12.85	12.85	12.85	12.85	12.84	
Results	P	P	P	P	P	P	P	P	

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## 7. Equipment for Test:

