

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 : SLEU1107003

## UN38.3 Test Report


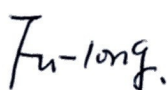

### Recommendations on the TRANSPORT OF DANGEROUS GOODS

(Manual of Tests and Criteria, Fifth revised edition)

**Customer : Lenovo**

**Model : L10M4E21**

**Rating : 14.88V , 41Wh / 2800mAh**

Approved By	Checked By	Prepared By
		

SIMPLO TECHNOLOGY CO., LTD.

ADD : No.471,Sec.2,Pa Teh Rd.,Hu Kou,Hsin Chu,Hsien 303 Taiwan

TEL: +886-3-5695920

FAX: +886-3-5695931



SIMPLO ELECTRONICS (Changshu) ,LTD.

ADD : No.2 Dong Nan Road,Changshu, Jingsu Province.China

TEL: +86-512-52302255

FAX: +86-512-52302277



SIMPLO ELECTRONICS (CHONGQING) ,LTD.

ADD : No.2 Zongbao Avenue, Shapingba Distnct, Chongqing, China

TEL: +86-23-61718899

FAX: +86-23-61210488



SIMPLO ELECTRONICS (SHANGHAI) ,LTD.

ADD : No.28, Sanzhuang Road., Songjiang Export Processing Zone ,Shanghai

TEL: +86-21-57748286

FAX: +86-21-57748285



本資料為新普科技股份有限公司之智慧財產權，非經本公司書面授權許可，不得透露或使用本資料，亦不得複印、複製或轉變成其它任何形式使用。  
The information contained herein is the exclusive property of SIMPLO TECHNOLOGY CO., LTD, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission.

本測試報告僅對上述測試項目有效，本報告分離使用無效

This test report is valid only to the items, Invalid for separation using.



## 1. Purpose of the Test :

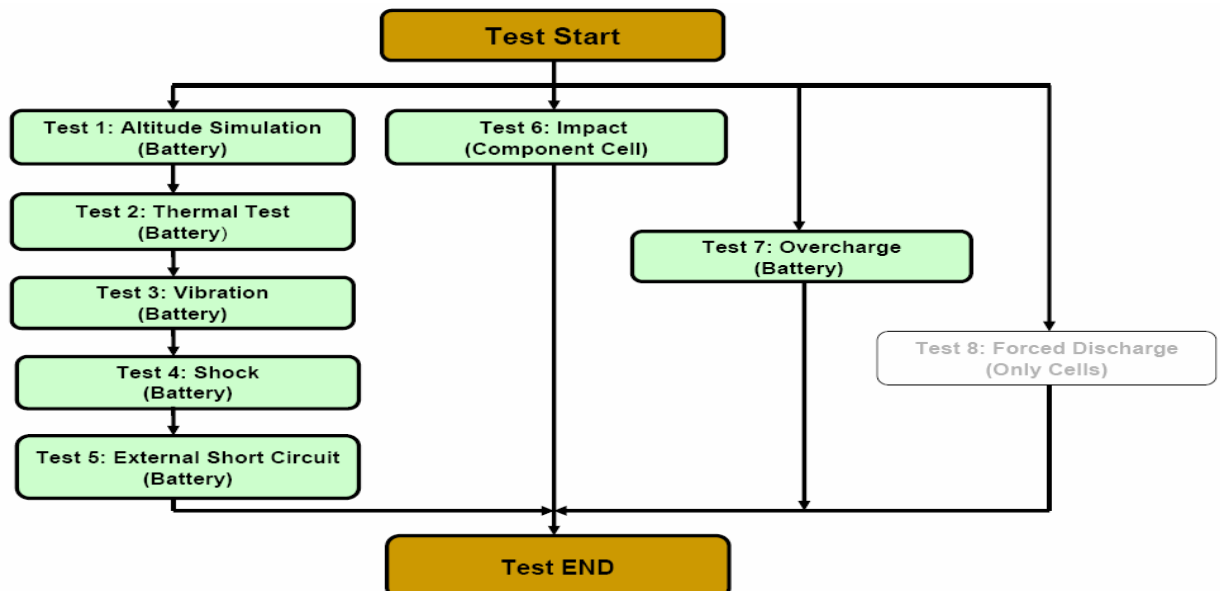
To test each cell/battery is of the type proved to meet the requirements in the Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Tests and Criteria, Fifth revised edition.

## 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.





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 : SLEU1107003

#### 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.

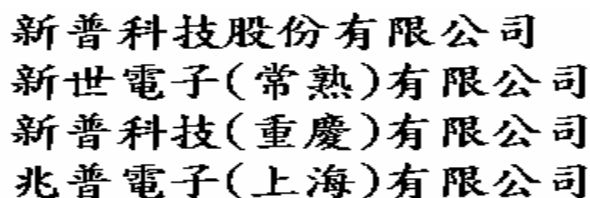
##### 4.3 T.6 Test results: **Pass**

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 :

## Test Instruments Reference List

本資料為新普科技股份有限公司之智慧財產權，非經本公司書面授權許可，不得透露或使用本資料，亦不得複印、複製或轉變成其它任何形式使用。  
The information contained herein is the exclusive property of SIMPLO TECHNOLOGY CO., LTD, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission.

本測試報告僅對上述測試項目有效，本報告分離使用無效  
This test report is valid only to the items, Invalid for separation using.

Page 4 of 7



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 : SLEU1107003

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

Control No.: SLEU-1107003

UN 38.3 Test Datasheet

Customer: Lenovo

Model name: L10M4E21 4S1P

Test duration: 2011/07/01~2011/07/25

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: 07 / 14 / 08 : 24  
Finish time: 07 / 14 / 14 : 44

Ambient temp.: 24.1 °C

Operator: Betty

Reviewer: Esmond

Sample No.: 01					Sample No.: 05						
	Before	After	Variation		Results		Before	After	Variation		Results
Mass (g)	228.6	228.6	Mass loss %	0.00%	P	Mass (g)	228.5	228.4	Mass loss %	0.04%	P
OCV (V)	17.19	17.19	Remained OCV%	100.00%		OCV (V)	17.19	17.19	Remained OCV%	100.00%	
Sample No.: 02					Sample No.: 06						
	Before	After	Variation		Results		Before	After	Variation		Results
Mass (g)	228.5	228.5	Mass loss %	0.00%	P	Mass (g)	228.5	228.4	Mass loss %	0.04%	P
OCV (V)	17.19	17.19	Remained OCV%	100.00%		OCV (V)	17.18	17.18	Remained OCV%	100.00%	
Sample No.: 03					Sample No.: 07						
	Before	After	Variation		Results		Before	After	Variation		Results
Mass (g)	228.6	228.6	Mass loss %	0.00%	P	Mass (g)	228.4	228.4	Mass loss %	0.00%	P
OCV (V)	17.18	17.18	Remained OCV%	100.00%		OCV (V)	17.19	17.19	Remained OCV%	100.00%	
Sample No.: 04					Sample No.: 08						
	Before	After	Variation		Results		Before	After	Variation		Results
Mass (g)	228.6	228.6	Mass loss %	0.00%	P	Mass (g)	228.3	228.3	Mass loss %	0.00%	P
OCV (V)	17.19	17.19	Remained OCV%	100.00%		OCV (V)	17.19	17.18	Remained OCV%	99.94%	

### T.2 Thermal Test

Start time: 07 / 14 / 15 : 16  
Finish time: 07 / 21 / 10 : 17

Ambient temp.: 24.1 °C

Operator: Betty

Reviewer: Esmond

Sample No.: 01					Sample No.: 05						
	Before	After	Variation		Results		Before	After	Variation		Results
Mass (g)	228.6	228.5	Mass loss %	0.04%	P	Mass (g)	228.4	228.3	Mass loss %	0.04%	P
OCV (V)	17.19	16.97	Remained OCV%	98.74%		OCV (V)	17.19	16.96	Remained OCV%	98.69%	
Sample No.: 02					Sample No.: 06						
	Before	After	Variation		Results		Before	After	Variation		Results
Mass (g)	228.5	228.5	Mass loss %	0.00%	P	Mass (g)	228.4	228.3	Mass loss %	0.04%	P
OCV (V)	17.19	17.01	Remained OCV%	98.95%		OCV (V)	17.18	16.97	Remained OCV%	98.78%	
Sample No.: 03					Sample No.: 07						
	Before	After	Variation		Results		Before	After	Variation		Results
Mass (g)	228.6	228.5	Mass loss %	0.04%	P	Mass (g)	228.4	228.3	Mass loss %	0.04%	P
OCV (V)	17.18	17.00	Remained OCV%	98.95%		OCV (V)	17.19	16.97	Remained OCV%	98.74%	
Sample No.: 04					Sample No.: 08						
	Before	After	Variation		Results		Before	After	Variation		Results
Mass (g)	228.6	228.6	Mass loss %	0.00%	P	Mass (g)	228.3	228.2	Mass loss %	0.04%	P
OCV (V)	17.19	16.98	Remained OCV%	98.78%		OCV (V)	17.18	16.96	Remained OCV%	98.70%	

### T.3 Vibration

Start time: 07 / 21 / 11 : 34  
Finish time: 07 / 22 / 10 : 42

Ambient temp.: 24.3 °C

Operator: Betty

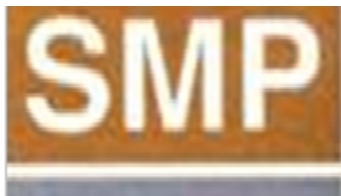
Reviewer: Esmond

Sample No.: 01					Sample No.: 05				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	228.5	228.4	Mass loss % 0.04%	P	Mass (g)	228.3	228.2	Mass loss % 0.04%	P
OCV (V)	16.97	16.96	Remained OCV% 99.94%		OCV (V)	16.96	16.96	Remained OCV% 100.00%	
Sample No.: 02					Sample No.: 06				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	228.5	228.4	Mass loss % 0.04%	P	Mass (g)	228.3	228.3	Mass loss % 0.00%	P
OCV (V)	17.01	17.01	Remained OCV% 100.00%		OCV (V)	16.97	16.97	Remained OCV% 100.00%	
Sample No.: 03					Sample No.: 07				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	228.5	228.5	Mass loss % 0.00%	P	Mass (g)	228.3	228.2	Mass loss % 0.04%	P
OCV (V)	17.00	17.00	Remained OCV% 100.00%		OCV (V)	16.97	16.96	Remained OCV% 99.94%	
Sample No.: 04					Sample No.: 08				
	Before	After	Variation	Results		Before	After	Variation	Results
Mass (g)	228.6	228.5	Mass loss % 0.04%	P	Mass (g)	228.2	228.2	Mass loss % 0.00%	P
OCV (V)	16.98	16.97	Remained OCV% 99.94%		OCV (V)	16.96	16.96	Remained OCV% 100.00%	

本資料為新普科技股份有限公司之智慧財產權，非經本公司書面授權許可，不得透露或使用本資料，亦不得複印、複製或轉變成其它任何形式使用。  
The information contained herein is the exclusive property of SIMPLO TECHNOLOGY CO., LTD, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission.

本測試報告僅對上述測試項目有效，本報告分離使用無效

This test report is valid only to the items, Invalid for separation using.



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 : SLEU1107003

T.4 Shock

Start time: 07 / 22 / 13 : 36  
Finish time: 07 / 22 / 15 : 23

Ambient temp.: 25.6 ℃

Operator: Betty

Reviewer: Esmond

Sample No.: 01					Sample No.: 05						
	Before	After	Variation		Results		Before	After	Variation		Results
Mass (g)	228.4	228.4	Mass loss %	0.00%	P	Mass (g)	228.2	228.2	Mass loss %	0.00%	P
OCV (V)	16.96	16.96	Remained OCV%	100.00%		OCV (V)	16.96	16.96	Remained OCV%	100.00%	
Sample No.: 02					Sample No.: 06						
	Before	After	Variation		Results		Before	After	Variation		Results
Mass (g)	228.4	228.4	Mass loss %	0.00%	P	Mass (g)	228.3	228.2	Mass loss %	0.04%	P
OCV (V)	17.01	17.00	Remained OCV%	99.94%		OCV (V)	16.97	16.97	Remained OCV%	100.00%	
Sample No.: 03					Sample No.: 07						
	Before	After	Variation		Results		Before	After	Variation		Results
Mass (g)	228.5	228.4	Mass loss %	0.04%	P	Mass (g)	228.2	228.1	Mass loss %	0.04%	P
OCV (V)	17.00	16.99	Remained OCV%	99.94%		OCV (V)	16.96	16.95	Remained OCV%	99.94%	
Sample No.: 04					Sample No.: 08						
	Before	After	Variation		Results		Before	After	Variation		Results
Mass (g)	228.5	228.5	Mass loss %	0.00%	P	Mass (g)	228.2	228.1	Mass loss %	0.04%	P
OCV (V)	16.97	16.97	Remained OCV%	100.00%		OCV (V)	16.96	16.96	Remained OCV%	100.00%	

T.5 External Short Circuit

Start time: 07 / 22 / 16 : 12  
Finish time: 07 / 25 / 08 : 37

Ambient temp.: 25.3 ℃

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)	54.3		53.6		55.3		58.5		53.7		53.6		54.2		54.9	
OCV before test after short circuit(V)	16.96	0.00	17.00	0.00	16.99	0.00	16.97	0.00	16.96	0.00	16.97	0.00	16.95	0.00	16.96	0.00
Max Temp. (< 170℃)	55.2		55.2		55.1		55.2		55.0		55.0		55.0		55.2	
Results	P		P		P		P		P		P		P		P	

T.6 Impact ( Component cell )

Start time: 07 / 20 / 15 : 11  
Finish time: 07 / 21 / 08 : 36

Ambient temp.: 25.3 ℃

Operator: Betty

Reviewer: Esmond

	Sample No.: 01C	Sample No.: 02C	Sample No.: 03C	Sample No.: 04C	Sample No.: 05C
OCV before test(V)	3.72	3.71	3.72	3.71	3.72
Max Temp. (< 170℃)	96.9	95.4	95.3	94.3	98.9
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: 07 / 14 / 10 : 27  
Finish time: 07 / 22 / 15 : 44

Ambient temp.: 24.6 ℃

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)	17.19	17.19	17.19	17.18	17.19	17.18	17.19	17.19
Results	P	P	P	P	P	P	P	P

本資料為新普科技股份有限公司之智慧財產權，非經本公司書面授權許可，不得透露或使用本資料，亦不得複印、複製或轉變成其它任何形式使用。  
The information contained herein is the exclusive property of SIMPLO TECHNOLOGY CO., LTD, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission.

本測試報告僅對上述測試項目有效，本報告分離使用無效  
This test report is valid only to the items, Invalid for separation using.





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 : SLEU1107003

## 7. Equipment for Test:



本資料為新普科技股份有限公司之智慧財產權，非經本公司書面授權許可，不得透露或使用本資料，亦不得複印、複製或轉變成其它任何形式使用。  
The information contained herein is the exclusive property of SIMPLO TECHNOLOGY CO., LTD, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission.

本測試報告僅對上述測試項目有效,本報告分離使用無效  
This test report is valid only to the items, Invalid for separation using.