



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  
 華普電子(常熟)有限公司

Control Number:LE-CU-15-11-026

## *Lithium-ion Battery UN38.3 Test Report*

### Recommendations on the TRANSPORT OF DANGEROUS GOODS

(Manual of Tests and Criteria, Fifth revised edition, Amend.1)

**Customer: Lenovo**

**Model: L15M4PC2**

**Rating: 7.64V, TYP 6960mAh / 53Wh**

**MIN 6810mAh / 52Wh**

| Approved By | Checked By | Prepared By |
|-------------|------------|-------------|
| Winel Zhao  | Winel Zhao | Happy-Gin.  |

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## 1. Purpose of the Test :

To test each cell/battery is of the type proved to meet the requirements in United Nations Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Tests and Criteria, Fifth revised edition, Amend.1, Section 38.3.

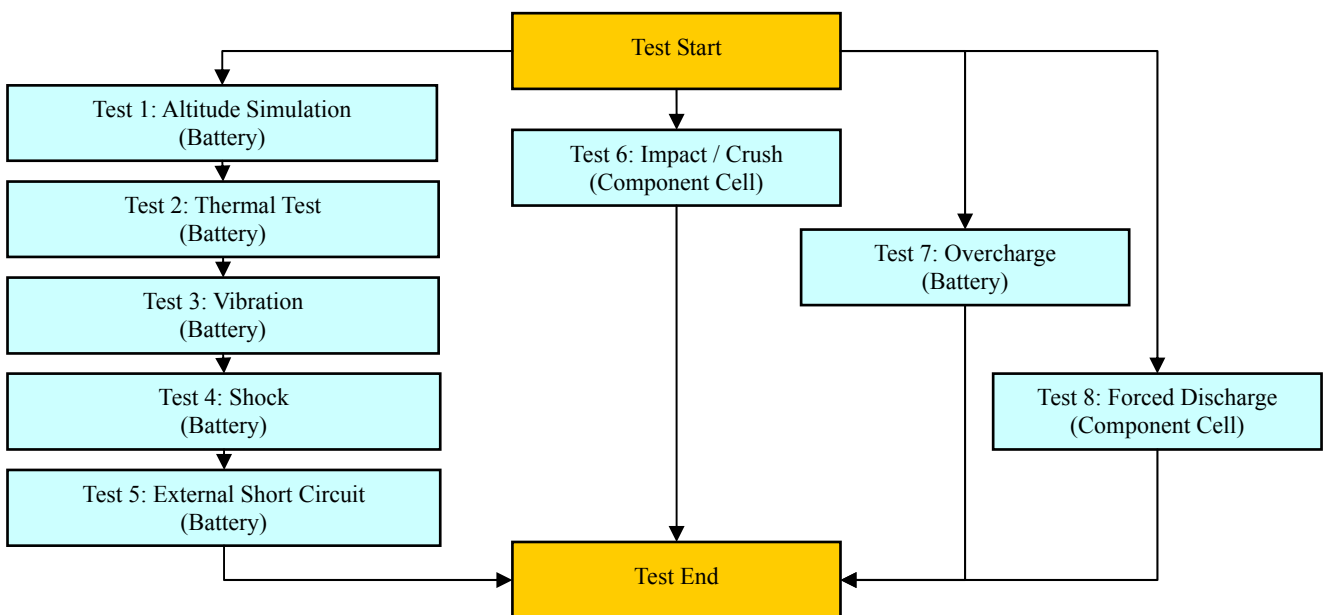
## 2. Test Quantity :

- 2.1 Four batteries, at first cycle, in fully charged states. (For T.1~T.5)
- 2.2 Four batteries, after 50 cycles ending in fully charged states. (For T.1~T.5)
- 2.3 Five component cells, at first cycle at 50% of the design rated capacity. (For T.6)
- 2.4 Four batteries, at first cycle, in fully charged states. (For T.7)
- 2.5 Four batteries, after 50 cycles ending in fully charged states. (For T.7)
- 2.6 Ten component cells, at first cycle in fully discharge states. (For T.8)
- 2.7 Ten component cells, after 50 cycles ending in fully discharged states. (For T.8)

## 3. Test Procedure :

3.1 All detailed test procedures must be based on United Nations Recommendations on the TRANSPORT OF DANGEROUS GOODS, Manual of Tests and Criteria, Fifth revised edition, Amend.1, Section 38.3.

3.2 Test flow shall be followed as below.





#### 4. Test Result :

##### 4.1 T.1 ~T.4 Test result: **Passed**

4.1.1 All batteries could meet the requirement of Table 38.3.1 Mass loss limit ( $M < 1g$ : 0.5% ;  $1g \leq M \leq 75g$ : 0.2% ;  $M > 75g$ : 0.1%) and residual OCV not less than 90% after the test.

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

##### 4.2 T.5 Test result: **Passed**

4.2.1 All batteries could meet the requirement, external temperature did not exceed  $170^{\circ}\text{C}$ .

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 result: **Passed**

4.3.1 All component cells could meet the requirement, external temperature did not exceed  $170^{\circ}\text{C}$ .

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: **Passed**

4.4.1 All batteries could meet no disassembly and no fire during the test and within seven days after the test.

##### 4.5 T.8 Test result: **Passed**

4.5.1 All component cells could meet the requirement, no disassembly and no fire during the test and within seven days after the test.

#### **Conclusion: The samples had passed the test items of UN38.3.**



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Control Number:LE-CU-15-11-026

## 5. Test Equipment :

SMP 新世電子(常熟)有限公司 SIMPLO TECHNOLOGY(CHANGSHU) INC. Revised date: 2015/10/20 Page:1  
 Address : No.2 Dong Nan Avenue, Changshu, Jiangsu Province, China Date:2015/10/21~2015/11/17  
 TEL: 0512-52302255 FAX: 0512-52302277 Model name: L15M4PC2

| Test Instruments Reference List |                               |                    |                    |                 |                                     |              |                       |                       |         |
|---------------------------------|-------------------------------|--------------------|--------------------|-----------------|-------------------------------------|--------------|-----------------------|-----------------------|---------|
| Used                            | Instrument ID(New)            | Instrument ID(Old) | Instrument Name    | Type            | Range of Use                        | Manufacturer | Calibration Date_Last | Calibration Date_Next | Remarks |
|                                 | <b>Pretest</b>                |                    |                    |                 |                                     |              |                       |                       |         |
| V                               | EE01-CA-100002                | C602M00.S01096     | 715 learning機      | 新普科技            | 18V/8A                              | 新普科技         | 2014/12/30            | 2015/12/29            |         |
| V                               | EE03-CA-100018                | C602M00.S01107     | 720 learning機      | 新普科技            | Chang 18V/17A<br>Discharge:1.6W/18A | 新普科技         | 2015/03/09            | 2016.03.08            |         |
|                                 | EE01-CA-100003                | C602M00.S01099     | 715 learning機      | 新普科技            | 18V/8A                              | 新普科技         | 2015/03/09            | 2016.03.08            |         |
|                                 | EE01-CA-100005                | C602M00.S01098     | 715 learning機      | 新普科技            | 18V/8A                              | 新普科技         | 2015/04/09            | 2016.04.08            |         |
|                                 | EE03-CA-100020                | C602M00.S01163     | 720 learning機      | 新普科技            | Chang 18V/17A<br>Discharge:1.6W/18A | 新普科技         | 2015/10/20            | 2016/10/19            |         |
|                                 | <b>Altitude Simulation</b>    |                    |                    |                 |                                     |              |                       |                       |         |
| V                               | EC15-CA-E00003                | C602M00.0462       | Altitude           | SVT-110         | Kpa: 0 ~ 99Kpa                      | HSIN JIANG   | 2015/09/08            | 2016.09/07            |         |
| V                               | EA02-CA-100002                | C602M00.0293       | mΩ Hitester        | 3561            | R:-10~310mΩ V:-20~20V               | HIOKI        | 2015/9/16             | 2016.9/15             |         |
| V                               | EF03-CA-100001                | C602M00.C0604      | Electronic Balance | XS1220M-SCS     | 1220g±0.001g                        | CHENGZHUN    | 2015/10/20            | 2016/10/19            |         |
| V                               | ED01-CA-100007                | C602M00.T0412      | Thermo Meter       | TA218           | T: -10℃~70℃<br>RH: 25%~98%          | KTJ          | 2015/8/27             | 2016.8/26             |         |
|                                 | <b>Thermal Test</b>           |                    |                    |                 |                                     |              |                       |                       |         |
| V                               | EC29-CA-E00002                | C602M00.0671       | Thermal Shock      | TSK-A4C-150     | T:-65℃ to 150℃                      | KSON         | 2015/06/09            | 2016.06/08            |         |
| V                               | EA02-CA-100002                | C602M00.0293       | mΩ Hitester        | 3561            | R:-10~310mΩ V:-20~20V               | HIOKI        | 2015/9/16             | 2016.9/15             |         |
| V                               | EF03-CA-100001                | C602M00.C0604      | Electronic Balance | XS1220M-SCS     | 1220g±0.001g                        | CHENGZHUN    | 2015/10/20            | 2016/10/19            |         |
| V                               | ED01-CA-100007                | C602M00.T0412      | Thermo Meter       | TA218           | T: -10℃~70℃<br>RH: 25%~98%          | KTJ          | 2015/8/27             | 2016.8/26             |         |
|                                 | <b>Vibration Test</b>         |                    |                    |                 |                                     |              |                       |                       |         |
|                                 | EC08-CA-E00001                | C602M00.0197       | Vibration          | EM-200F2K-25N50 | F:3~2000Hz<br>G:0.2~55G             | King Design  | 2015/3/11             | 2016.3/10             |         |
| V                               | EC08-CA-E00002                | C602M00.0052       | Vibration          | EM-200F2K-25N50 | F:3~2000Hz<br>G:0.2~55G             | King Design  | 2015/9/23             | 2016.9/22             |         |
| V                               | EA02-CA-100002                | C602M00.0293       | mΩ Hitester        | 3561            | R:-10~310mΩ V:-20~20V               | HIOKI        | 2015/9/16             | 2016.9/15             |         |
| V                               | EF03-CA-100001                | C602M00.C0604      | Electronic Balance | XS1220M-SCS     | 1220g±0.001g                        | CHENGZHUN    | 2015/10/20            | 2016/10/19            |         |
|                                 | <b>Shock Test</b>             |                    |                    |                 |                                     |              |                       |                       |         |
| V                               | EC17-CA-E00001                | C602M00.0570       | Shock              | HS 15/45        | G:10~2000G                          | Lansmont     | 2015/09/08            | 2016.09/07            |         |
| V                               | EA02-CA-100002                | C602M00.0293       | mΩ Hitester        | 3561            | R:-10~310mΩ V:-20~20V               | HIOKI        | 2015/9/16             | 2016.9/15             |         |
| V                               | EF03-CA-100001                | C602M00.C0604      | Electronic Balance | XS1220M-SCS     | 1220g±0.001g                        | CHENGZHUN    | 2015/10/20            | 2016/10/19            |         |
|                                 | <b>External Short Circuit</b> |                    |                    |                 |                                     |              |                       |                       |         |
| V                               | EA02-CA-100002                | C602M00.0293       | mΩ Hitester        | 3561            | R:-10~310mΩ V:-20~20V               | HIOKI        | 2015/9/16             | 2016.9/15             |         |
| V                               | EA09-CA-100004                | C602M00.0207       | Data logger        | 34970A          | V: 0~ 300V,<br>T: -150℃~1200℃       | Agilent      | 2015/9/16             | 2016.9/15             |         |
| V                               | EC26-CA-100023                | C602M00.0518       | chamber            | WIT TH-2P-E     | -40℃ to 150℃                        | WIT          | 2015/08/11            | 2016.08/10            |         |
| V                               | ED01-CA-100007                | C602M00.T0412      | Thermo Meter       | TA218           | T: -10℃~70℃<br>RH: 25%~98%          | KTJ          | 2015/8/27             | 2016.8/26             |         |
|                                 | <b>Impact /Crush</b>          |                    |                    |                 |                                     |              |                       |                       |         |
|                                 | EC17-CA-100001                | C602M00.1204       | Impact test        | 100-372         | H:60~80cm                           | JYI SHENG    | 2015/9/16             | 2016.9/15             |         |
| V                               | EC23-CA-E00001                | C602M00.0743       | Crush Test         | BE-6047         | 1.0KN~15.0KN                        | BELL         | 2015/09/08            | 2016.09/07            |         |
| V                               | EA09-CA-100005                | C602M00.0598       | Data logger        | 34970A          | V: 0~ 300V,<br>T: -150℃~1200℃       | Agilent      | 2015/9/16             | 2016.9/15             |         |
| V                               | ED01-CA-100010                | C602M00.T0581      | Thermo Meter       | TA218           | T: -10℃~70℃<br>RH: 25%~98%          | KTJ          | 2015/6/22             | 2016.6/21             |         |
|                                 | <b>Overcharge</b>             |                    |                    |                 |                                     |              |                       |                       |         |
| V                               | EA06-CA-E00003                | C602M00.P0779      | Power Supply       | DS6024          | 0~60V 0~24A                         | MOTECH       | 2015/03/11            | 2016.03/10            |         |
| V                               | EA06-CA-E00002                | C602M00.P0777      | Power Supply       | DS6024          | 0~60V 0~24A                         | MOTECH       | 2015/03/11            | 2016.03/10            |         |
| V                               | EA06-CA-E00001                | C602M00.P0775      | Power Supply       | DS6024          | 0~60V 0~24A                         | MOTECH       | 2015/03/11            | 2016.03/10            |         |
| V                               | EA06-CA-E00004                | C602M00.P0781      | Power Supply       | DS6024          | 0~60V 0~24A                         | MOTECH       | 2015/03/11            | 2016.03/10            |         |
| V                               | ED01-CA-100007                | C602M00.T0412      | Thermo Meter       | TA218           | T: -10℃~70℃<br>RH: 25%~98%          | KTJ          | 2015/8/27             | 2016.8/26             |         |
|                                 | <b>Proced Discharge</b>       |                    |                    |                 |                                     |              |                       |                       |         |
| V                               | EA06-CA-100004                |                    | Power Supply       | E3633A          | 0~8V,20A/0~20V,10A                  | AGILENT      | 2015/9/16             | 2016.9/15             |         |
| V                               | EA06-CA-100016                |                    | Power Supply       | E3633A          | 0~8V,20A/0~20V,10A                  | AGILENT      | 2015/5/10             | 2016.5/9              |         |
| V                               | EA06-CA-100015                | C602M00.P0481      | Power Supply       | E3633A          | 0~8V,20A/0~20V,10A                  | AGILENT      | 2015/5/10             | 2016.5/9              |         |
| V                               | EA05-CA-100006                |                    | Electronic LOAD    | 3311D           | 60V/60A, 300W                       | PRODIGIT     | 2015/05/12            | 2016.05/11            |         |
| V                               | EA05-CA-100009                |                    | Electronic LOAD    | 3311F           | 60V/60A, 300W                       | PRODIGIT     | 2015/05/12            | 2016.05/11            |         |
| V                               | EA05-CA-100008                | C602M00.L0402      | Electronic LOAD    | 3311F           | 60V/60A, 300W                       | PRODIGIT     | 2015/08/13            | 2016.08/12            |         |

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: 0.01mA-3A at 60Hz, 0.01mA-1A, at 1kHz

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Control Number:LE-CU-15-11-026

## 6. T.1~T.8 Detail Reports:

Control No.:LE-CU-15-11-026

### UN 38.3 Test Datasheet

Customer: Lenovo

Model Name:L15M4PC2

Test Duration: 2015/10/25~2015/11/17

Reviewer: Wind\_Zhao

Test Sample Identification:

| Battery Pack |            |                         |      |            | Component Cell           |      |            |                          |
|--------------|------------|-------------------------|------|------------|--------------------------|------|------------|--------------------------|
| Used         | Sample No. | Sample State            | Used | Sample No. | Sample State             | Used | Sample No. | Sample State             |
| √            | 01~04      | 1 Cycle, Fully charged  | √    | 05~08      | 50 Cycles, Fully charged | √    | 01C~05C    | 1 Cycle, 50% charged     |
| √            | 09~12      | 1 Cycle, Fully charged  | √    | 13~16      | 50 Cycles, Fully charged | √    | 06C~15C    | 1 Cycle, 0% discharged   |
|              |            | 25Cycles, Fully charged |      |            | 25Cycles, Fully charged  | √    | 16C~25C    | 50 Cycles, 0% discharged |

| T.1 Altitude Simulation                                     |         |         |                       |         | T.2 Thermal Test  |         |         |                       |         |
|---|---------|---------|-----------------------|---------|---|---------|---------|-----------------------|---------|
| Start time:2015/11/08 08:20<br>Finish time:2015/11/08 17:30 |         |         |                       |         | Start time:2015/11/08 17:40<br>Finish time:2015/11/15 08:20 |         |         |                       |         |
| Ambient temp.: 20.3 ℃                                       |         |         |                       |         | Ambient temp.: 20.6 ℃                                       |         |         |                       |         |
| Operator: Happy_Gu  |         |         |                       |         | Operator: Happy_Gu  |         |         |                       |         |
| Sample No.: 01  |         |         |                       |         | Sample No.: 02  |         |         |                       |         |
|   | Before  | After   | Variation             | Results |   | Before  | After   | Variation             | Results |
| Mass (g)  | 226.111 | 226.109 | Mass loss % 0.00%     | P       | Mass (g)  | 226.211 | 226.208 | Mass loss % 0.00%     | P       |
| OCV (V)   | 8.615   | 8.607   | Residual OCV % 99.91% |         | OCV (V)   | 8.618   | 8.608   | Residual OCV % 99.90% |         |
| Sample No.: 03  |         |         |                       |         | Sample No.: 04  |         |         |                       |         |
|   | Before  | After   | Variation             | Results |   | Before  | After   | Variation             | Results |
| Mass (g)  | 226.082 | 226.079 | Mass loss % 0.00%     | P       | Mass (g)  | 225.986 | 225.984 | Mass loss % 0.00%     | P       |
| OCV (V)   | 8.618   | 8.610   | Residual OCV % 99.91% |         | OCV (V)   | 8.616   | 8.608   | Residual OCV % 99.91% |         |
| Sample No.: 05  |         |         |                       |         | Sample No.: 06  |         |         |                       |         |
|   | Before  | After   | Variation             | Results |   | Before  | After   | Variation             | Results |
| Mass (g)  | 225.945 | 225.943 | Mass loss % 0.00%     | P       | Mass (g)  | 226.027 | 226.025 | Mass loss % 0.00%     | P       |
| OCV (V)   | 8.622   | 8.613   | Residual OCV % 99.90% |         | OCV (V)   | 8.620   | 8.612   | Residual OCV % 99.91% |         |
| Sample No.: 07  |         |         |                       |         | Sample No.: 08  |         |         |                       |         |
|   | Before  | After   | Variation             | Results |   | Before  | After   | Variation             | Results |
| Mass (g)  | 226.170 | 226.168 | Mass loss % 0.00%     | P       | Mass (g)  | 226.115 | 226.113 | Mass loss % 0.00%     | P       |
| OCV (V)   | 8.619   | 8.611   | Residual OCV % 99.91% |         | OCV (V)   | 8.617   | 8.610   | Residual OCV % 99.92% |         |

| T.3 Vibration   |         |         |                       |         | T.4 Vibration   |         |         |                       |         |
|---|---------|---------|-----------------------|---------|---|---------|---------|-----------------------|---------|
| Start time:2015/11/15 08:45<br>Finish time:2015/11/16 08:20 |         |         |                       |         | Start time:2015/11/16 08:20<br>Finish time:2015/11/16 08:20 |         |         |                       |         |
| Ambient temp.: 21.0 ℃                                       |         |         |                       |         | Ambient temp.: 21.0 ℃                                       |         |         |                       |         |
| Operator: Happy_Gu  |         |         |                       |         | Operator: Happy_Gu  |         |         |                       |         |
| Sample No.: 01  |         |         |                       |         | Sample No.: 02  |         |         |                       |         |
|   | Before  | After   | Variation             | Results |   | Before  | After   | Variation             | Results |
| Mass (g)  | 226.107 | 226.104 | Mass loss % 0.00%     | P       | Mass (g)  | 226.205 | 226.202 | Mass loss % 0.00%     | P       |
| OCV (V)   | 8.485   | 8.477   | Residual OCV % 99.91% |         | OCV (V)   | 8.487   | 8.476   | Residual OCV % 99.87% |         |
| Sample No.: 03  |         |         |                       |         | Sample No.: 04  |         |         |                       |         |
|   | Before  | After   | Variation             | Results |   | Before  | After   | Variation             | Results |
| Mass (g)  | 226.077 | 226.075 | Mass loss % 0.00%     | P       | Mass (g)  | 225.980 | 225.978 | Mass loss % 0.00%     | P       |
| OCV (V)   | 8.489   | 8.481   | Residual OCV % 99.91% |         | OCV (V)   | 8.488   | 8.479   | Residual OCV % 99.89% |         |
| Sample No.: 05  |         |         |                       |         | Sample No.: 06  |         |         |                       |         |
|   | Before  | After   | Variation             | Results |   | Before  | After   | Variation             | Results |
| Mass (g)  | 225.941 | 225.939 | Mass loss % 0.00%     | P       | Mass (g)  | 226.021 | 226.018 | Mass loss % 0.00%     | P       |
| OCV (V)   | 8.492   | 8.484   | Residual OCV % 99.91% |         | OCV (V)   | 8.489   | 8.481   | Residual OCV % 99.91% |         |
| Sample No.: 07  |         |         |                       |         | Sample No.: 08  |         |         |                       |         |
|   | Before  | After   | Variation             | Results |   | Before  | After   | Variation             | Results |
| Mass (g)  | 226.164 | 226.162 | Mass loss % 0.00%     | P       | Mass (g)  | 226.111 | 226.109 | Mass loss % 0.00%     | P       |
| OCV (V)   | 8.488   | 8.479   | Residual OCV % 99.89% |         | OCV (V)   | 8.486   | 8.477   | Residual OCV % 99.89% |         |

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Control Number:LE-CU-15-11-026

| T.4 Shock      |         |         |                |        | Start time:2015/11/16 08:40 | Ambient temp.: 21.9 ℃ | Operator: Happy_Gu |         |                |        |         |
|----------------|---------|---------|----------------|--------|-----------------------------|-----------------------|--------------------|---------|----------------|--------|---------|
| Sample No.: 01 |         |         |                |        | Sample No.: 02              |                       |                    |         |                |        |         |
|                | Before  | After   | Variation      |        | Results                     |                       | Before             | After   | Variation      |        | Results |
| Mass (g)       | 226.104 | 226.101 | Mass loss %    | 0.00%  | P                           | Mass (g)              | 226.202            | 226.199 | Mass loss %    | 0.00%  | P       |
| OCV (V)        | 8.477   | 8.472   | Residual OCV % | 99.94% |                             | OCV (V)               | 8.476              | 8.473   | Residual OCV % | 99.96% |         |
| Sample No.: 03 |         |         |                |        | Sample No.: 04              |                       |                    |         |                |        |         |
| Mass (g)       | 226.075 | 226.072 | Mass loss %    | 0.00%  | P                           | Mass (g)              | 225.978            | 225.975 | Mass loss %    | 0.00%  | P       |
| OCV (V)        | 8.481   | 8.477   | Residual OCV % | 99.95% |                             | OCV (V)               | 8.479              | 8.475   | Residual OCV % | 99.95% |         |
| Sample No.: 05 |         |         |                |        | Sample No.: 06              |                       |                    |         |                |        |         |
| Mass (g)       | 225.939 | 225.936 | Mass loss %    | 0.00%  | P                           | Mass (g)              | 226.018            | 226.015 | Mass loss %    | 0.00%  | P       |
| OCV (V)        | 8.484   | 8.481   | Residual OCV % | 99.96% |                             | OCV (V)               | 8.481              | 8.477   | Residual OCV % | 99.95% |         |
| Sample No.: 07 |         |         |                |        | Sample No.: 08              |                       |                    |         |                |        |         |
| Mass (g)       | 226.162 | 226.159 | Mass loss %    | 0.00%  | P                           | Mass (g)              | 226.109            | 226.106 | Mass loss %    | 0.00%  | P       |
| OCV (V)        | 8.479   | 8.477   | Residual OCV % | 99.98% |                             | OCV (V)               | 8.477              | 8.474   | Residual OCV % | 99.96% |         |

| T.5 External Short Circuit              |       |                |       |                |       |                |       |                |       |                |       |                |       |                |       |       | Start time:2015/11/16 13:50 | Ambient temp.: 20.7 ℃ | Operator: Happy_Gu |
|---|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|-------|-----------------------------|-----------------------|--------------------|
| 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)                     | 55.1  |                | 56.7  |                | 58.1  |                | 56.3  |                | 57.1  |                | 57.8  |                | 58.5  |                | 54.9  |       |                             |                       |                    |
| OCV before test/ after short circuit(V) | 8.472 | 0.000          | 8.473 | 0.000          | 8.477 | 0.000          | 8.475 | 0.000          | 8.481 | 0.000          | 8.477 | 0.000          | 8.477 | 0.000          | 8.474 | 0.000 |                             |                       |                    |
| Max Temp. (< 170℃)                      | 54.7  |                | 55.1  |                | 55.7  |                | 54.6  |                | 55.1  |                | 54.9  |                | 55.7  |                | 54.7  |       |                             |                       |                    |
| Results                                 | P     |                | P     |                | P     |                | P     |                | P     |                | P     |                | P     |                | P     |       |                             |                       |                    |

| T.6 Impact / Crush  |       |                 |       |                 |       |                 |       |                 |       |  |  |  |  |  |  |  | Start time:2015/10/27 08:30 | Ambient temp.: 21.4 ℃ | Operator: Happy_Gu |
|---|-------|-----------------|-------|-----------------|-------|-----------------|-------|-----------------|-------|--|--|--|--|--|--|--|-----------------------------|-----------------------|--------------------|
| <input type="checkbox"/> Impact- Cylindrical cells greater than 20mm in diameter<br><input checked="" type="checkbox"/> Crush- Prismatic, pouch, coin/button cells and cylindrical cells not more than 20mm in diameter |       |                 |       |                 |       |                 |       |                 |       |  |  |  |  |  |  |  |                             |                       |                    |
| Sample No.: 01C   |       | Sample No.: 02C |       | Sample No.: 03C |       | Sample No.: 04C |       | Sample No.: 05C |       |  |  |  |  |  |  |  |                             |                       |                    |
| OCV before test(V)  | 3.821 |                 | 3.821 |                 | 3.820 |                 | 3.821 |                 | 3.821 |  |  |  |  |  |  |  |                             |                       |                    |
| Max Temp. (< 170℃)  | 32.7  |                 | 30.7  |                 | 31.4  |                 | 29.9  |                 | 30.1  |  |  |  |  |  |  |  |                             |                       |                    |
| Results   | P     |                 | P     |                 | P     |                 | P     |                 | P     |  |  |  |  |  |  |  |                             |                       |                    |

| T.7 Overcharge     |       |                |       |                |       |                |       |                |       |                |       |                |       |                |       |  | Start time:2015/11/08 09:30 | Ambient temp.: 21.3 ℃ | Operator: Happy_Gu |
|--------------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|--|-----------------------------|-----------------------|--------------------|
| 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) | 8.615 |                | 8.620 |                | 8.617 |                | 8.616 |                | 8.616 |                | 8.620 |                | 8.622 |                | 8.620 |  |                             |                       |                    |
| Results            | P     |                | P     |                | P     |                | P     |                | P     |                | P     |                | P     |                | P     |  |                             |                       |                    |

| T.8 Forced Discharge |       |                 |       |                 |       |                 |       |                 |       |  |  |  |  |  |  |  | Start time:2015/11/08 08:30 | Ambient temp.: 20.8 ℃ | Operator: Happy_Gu |
|----------------------|-------|-----------------|-------|-----------------|-------|-----------------|-------|-----------------|-------|--|--|--|--|--|--|--|-----------------------------|-----------------------|--------------------|
| Sample No.: 06C      |       | Sample No.: 07C |       | Sample No.: 08C |       | Sample No.: 09C |       | Sample No.: 10C |       |  |  |  |  |  |  |  |                             |                       |                    |
| OCV before test(V)   | 3.381 |                 | 3.381 |                 | 3.383 |                 | 3.380 |                 | 3.382 |  |  |  |  |  |  |  |                             |                       |                    |
| Results              | P     |                 | P     |                 | P     |                 | P     |                 | P     |  |  |  |  |  |  |  |                             |                       |                    |
| Sample No.: 11C      |       | Sample No.: 12C |       | Sample No.: 13C |       | Sample No.: 14C |       | Sample No.: 15C |       |  |  |  |  |  |  |  |                             |                       |                    |
| OCV before test(V)   | 3.384 |                 | 3.381 |                 | 3.380 |                 | 3.380 |                 | 3.382 |  |  |  |  |  |  |  |                             |                       |                    |
| Results              | P     |                 | P     |                 | P     |                 | P     |                 | P     |  |  |  |  |  |  |  |                             |                       |                    |
| Sample No.: 16C      |       | Sample No.: 17C |       | Sample No.: 18C |       | Sample No.: 19C |       | Sample No.: 20C |       |  |  |  |  |  |  |  |                             |                       |                    |
| OCV before test(V)   | 3.373 |                 | 3.374 |                 | 3.377 |                 | 3.376 |                 | 3.377 |  |  |  |  |  |  |  |                             |                       |                    |
| Results              | P     |                 | P     |                 | P     |                 | P     |                 | P     |  |  |  |  |  |  |  |                             |                       |                    |
| Sample No.: 21C      |       | Sample No.: 22C |       | Sample No.: 23C |       | Sample No.: 24C |       | Sample No.: 25C |       |  |  |  |  |  |  |  |                             |                       |                    |
| OCV before test(V)   | 3.374 |                 | 3.376 |                 | 3.373 |                 | 3.375 |                 | 3.376 |  |  |  |  |  |  |  |                             |                       |                    |
| Results              | P     |                 | P     |                 | P     |                 | P     |                 | P     |  |  |  |  |  |  |  |                             |                       |                    |

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Control Number:LE-CU-15-11-026

7. Test sample:



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