Battery Pack Test Report
UN38.3

Customer: Lenovo
Pack Model: L15C2PB5
Nominal voltage: 7.6V
Nominal capacity: 30Wh
Configuration: 2S1P
Customer P/N: 5B10K90787
Celxpert P/N: 921300078
Cell Type: Coslight CA595490HV-C 4030mAh
Jan. 24 . 2018

Approved by

Reviewed by

Prepared by
Figure photo of the pack
1. UN38.3 Test Report

<table>
<thead>
<tr>
<th>Test Period</th>
<th>Test Spec.</th>
<th>Parts Name</th>
<th>Application</th>
<th>Quantity</th>
<th>Details</th>
</tr>
</thead>
</table>

1.1 Test Summary

<table>
<thead>
<tr>
<th>Item</th>
<th>Test Item</th>
<th>Test Result</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Altitude simulation test (UN38.3-1)</td>
<td>Pass</td>
<td>Page 9</td>
</tr>
<tr>
<td>T2</td>
<td>Thermal test (UN38.3-2)</td>
<td>Pass</td>
<td>Page 10</td>
</tr>
<tr>
<td>T3</td>
<td>Vibration test (UN38.3-3)</td>
<td>Pass</td>
<td>Page 11</td>
</tr>
<tr>
<td>T4</td>
<td>Shock test (UN38.3-4)</td>
<td>Pass</td>
<td>Page 12</td>
</tr>
<tr>
<td>T5</td>
<td>Short Circuit test (UN38.3-5)</td>
<td>Pass</td>
<td>Page 13</td>
</tr>
<tr>
<td>T6</td>
<td>Crush Test (UN38.3-6)</td>
<td>Pass</td>
<td>Page 13</td>
</tr>
<tr>
<td>T7</td>
<td>Overcharge test (UN38.3-7)</td>
<td>Pass</td>
<td>Page 14</td>
</tr>
<tr>
<td>T8</td>
<td>Forced discharge test (UN38.3-8)</td>
<td>Pass</td>
<td>Page 15</td>
</tr>
</tbody>
</table>

The battery pack passes UN38.3 test.
### 1.2 Test sample list

<table>
<thead>
<tr>
<th>No.</th>
<th>Pack S/N</th>
<th>Test item</th>
<th>No.</th>
<th>Cell Num.</th>
<th>Test item</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sample No:1/16</td>
<td>38.3.1~5</td>
<td>1</td>
<td>Coslight CA595490HV-C 4030mAh</td>
<td>38.3.6</td>
</tr>
<tr>
<td>2</td>
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<td>2</td>
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<td>38.3.6</td>
</tr>
<tr>
<td>3</td>
<td>Sample No:3/16</td>
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<td>3</td>
<td>Coslight CA595490HV-C 4030mAh</td>
<td>38.3.6</td>
</tr>
<tr>
<td>4</td>
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<tr>
<td>5</td>
<td>Sample No:5/16</td>
<td>38.3.1~5</td>
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<td>38.3.6</td>
</tr>
<tr>
<td>6</td>
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<td>38.3.6</td>
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<tr>
<td>7</td>
<td>Sample No:7/16</td>
<td>38.3.1~5</td>
<td>7</td>
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<td>38.3.8</td>
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<tr>
<td>8</td>
<td>Sample No:8/16</td>
<td>38.3.1~5</td>
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<td>Sample No:11/16</td>
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<td>38.3.6</td>
</tr>
<tr>
<td>12</td>
<td>Sample No:12/16</td>
<td>38.3.7</td>
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<td>Coslight CA595490HV-C 4030mAh</td>
<td>38.3.8</td>
</tr>
<tr>
<td>13</td>
<td>Sample No:13/16</td>
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<td>38.3.8</td>
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<td>14</td>
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<td>38.3.8</td>
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<td>38.3.8</td>
</tr>
<tr>
<td>19</td>
<td>Sample No:19/16</td>
<td>38.3.7</td>
<td>19</td>
<td>Coslight CA595490HV-C 4030mAh</td>
<td>38.3.8</td>
</tr>
<tr>
<td>20</td>
<td>Sample No:20/16</td>
<td>38.3.7</td>
<td>20</td>
<td>Coslight CA595490HV-C 4030mAh</td>
<td>38.3.8</td>
</tr>
<tr>
<td>21</td>
<td>Sample No:21/16</td>
<td>38.3.7</td>
<td>21</td>
<td>Coslight CA595490HV-C 4030mAh</td>
<td>38.3.8</td>
</tr>
<tr>
<td>22</td>
<td>Sample No:22/16</td>
<td>38.3.7</td>
<td>22</td>
<td>Coslight CA595490HV-C 4030mAh</td>
<td>38.3.8</td>
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<tr>
<td>23</td>
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<td>38.3.7</td>
<td>23</td>
<td>Coslight CA595490HV-C 4030mAh</td>
<td>38.3.8</td>
</tr>
<tr>
<td>24</td>
<td>Sample No:24/16</td>
<td>38.3.7</td>
<td>24</td>
<td>Coslight CA595490HV-C 4030mAh</td>
<td>38.3.8</td>
</tr>
<tr>
<td>25</td>
<td>Sample No:25/16</td>
<td>38.3.7</td>
<td>25</td>
<td>Coslight CA595490HV-C 4030mAh</td>
<td>38.3.8</td>
</tr>
</tbody>
</table>
1.3 Test result

<table>
<thead>
<tr>
<th>Item</th>
<th>Test Item</th>
<th>Test specification</th>
<th>Judge criteria</th>
<th>Sample(s)</th>
</tr>
</thead>
</table>
| T1   | Altitude Simulation (UN38.3-1) | 1-1.4 batteries are standard charged. 4 batteries are 1C cycled 50 times, ending in fully charged state. All batteries weight is measured. The charged batteries voltage are measured and recorded.  
1-2. Batteries shall be stored at a pressure of 11.6Kpa or less for at least six hours at ambient temperature 20+/-5°C.  
1-3. Vacuum is released. All cells weight is measured. The charged cell voltage are measured and recorded. | No mass loss (<0.1%), no leakage, no venting, no disassembly, no rupture and no fire. Battery voltage drop < 10%. | 4 packs are standard charged (Pack#1~4)  
4 packs 50 cycled ending in fully charged states (Pack#5~8) |

Test Period
Start: 2015/11/16          End: 2015/11/16

Test Equipment
數位電表 Q153，電子天平 Q090，真空烘箱 Q146

Major Problem
- 

Warning Point
- 

Recommendation
The battery packs pass the test.

<table>
<thead>
<tr>
<th>No.</th>
<th>Before OCV (V)</th>
<th>Before Weight (g)</th>
<th>After OCV (V)</th>
<th>After Weight (g)</th>
<th>Voltage residue (%)</th>
<th>Mass loss (%)</th>
<th>other event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8.584</td>
<td>133.46</td>
<td>8.582</td>
<td>133.45</td>
<td>99.98%</td>
<td>0.01%</td>
<td>O</td>
</tr>
<tr>
<td>2</td>
<td>8.579</td>
<td>133.37</td>
<td>8.585</td>
<td>133.36</td>
<td>99.99%</td>
<td>0.01%</td>
<td>O</td>
</tr>
<tr>
<td>3</td>
<td>8.578</td>
<td>133.69</td>
<td>8.577</td>
<td>133.68</td>
<td>99.99%</td>
<td>0.01%</td>
<td>O</td>
</tr>
<tr>
<td>4</td>
<td>8.581</td>
<td>133.52</td>
<td>8.578</td>
<td>133.51</td>
<td>99.97%</td>
<td>0.01%</td>
<td>O</td>
</tr>
<tr>
<td>5</td>
<td>8.533</td>
<td>133.71</td>
<td>8.531</td>
<td>133.70</td>
<td>99.98%</td>
<td>0.01%</td>
<td>O</td>
</tr>
<tr>
<td>6</td>
<td>8.524</td>
<td>133.64</td>
<td>8.521</td>
<td>133.63</td>
<td>99.96%</td>
<td>0.01%</td>
<td>O</td>
</tr>
<tr>
<td>7</td>
<td>8.537</td>
<td>133.83</td>
<td>8.536</td>
<td>133.82</td>
<td>99.99%</td>
<td>0.01%</td>
<td>O</td>
</tr>
<tr>
<td>8</td>
<td>8.529</td>
<td>133.75</td>
<td>8.525</td>
<td>133.74</td>
<td>99.95%</td>
<td>0.01%</td>
<td>O</td>
</tr>
</tbody>
</table>

Note: L-Leakage ; V-Venting ; D-Disassembly ; R-Rupture ; F-Fire  
O-No Leakage , No Venting , No Disassembly , No Rupture , No Fire

Raw Data
<table>
<thead>
<tr>
<th>Item</th>
<th>Test Item</th>
<th>Test specification</th>
<th>Judge criteria</th>
<th>Sample(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2</td>
<td>Thermal test (UN38.3-2)</td>
<td>2-1. Packs are stored for 6 hours at 72±2°C, followed by storage for 6 hours at -40±2°C. The maximum time interval between test temperature extremes is 30 minutes. 2-2. Repeat 2-1 for 10 times. Then store the packs at ambient for 24 hours. All packs weight are measured. The charged battery voltage are measured and recorded.</td>
<td>No mass loss (&lt;0.1%), no leakage, no venting, no disassembly, no rupture and no fire. Battery voltage drop &lt; 10%.</td>
<td>4 packs are standard charged (Pack#1<del>4) 4 packs 50 cycled ending in fully charged states (Pack#5</del>8)</td>
</tr>
</tbody>
</table>

**Test Period**

**Test Equipment**
數位電表 Q153, 電子天平 Q090, 冷熱衝擊機 Q336

**Major Problem**
- 

**Warning Point**
- 

**Recommendation**
The packs pass the test.

### Thermal Test on Charged Packs

<table>
<thead>
<tr>
<th>No.</th>
<th>Before</th>
<th>After</th>
<th>Voltage residue</th>
<th>mass loss</th>
<th>other event</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OCV (V)</td>
<td>Weight (g)</td>
<td>OCV (V)</td>
<td>Weight (g)</td>
<td>Volt (%)</td>
</tr>
<tr>
<td>1</td>
<td>8.582</td>
<td>133.45</td>
<td>8.513</td>
<td>133.37</td>
<td>99.20%</td>
</tr>
<tr>
<td>2</td>
<td>8.578</td>
<td>133.86</td>
<td>8.502</td>
<td>133.78</td>
<td>99.11%</td>
</tr>
<tr>
<td>3</td>
<td>8.577</td>
<td>133.68</td>
<td>8.502</td>
<td>133.61</td>
<td>99.13%</td>
</tr>
<tr>
<td>4</td>
<td>8.578</td>
<td>133.31</td>
<td>8.504</td>
<td>133.44</td>
<td>99.14%</td>
</tr>
<tr>
<td>5</td>
<td>8.531</td>
<td>133.70</td>
<td>8.460</td>
<td>133.63</td>
<td>99.17%</td>
</tr>
<tr>
<td>6</td>
<td>8.521</td>
<td>133.63</td>
<td>8.446</td>
<td>133.55</td>
<td>99.12%</td>
</tr>
<tr>
<td>7</td>
<td>8.536</td>
<td>133.82</td>
<td>8.468</td>
<td>133.73</td>
<td>99.20%</td>
</tr>
<tr>
<td>8</td>
<td>8.525</td>
<td>133.74</td>
<td>8.450</td>
<td>133.66</td>
<td>99.12%</td>
</tr>
</tbody>
</table>

Note: L-Leakage; V-Venting; D-Disassembly; R-Rupture; F-Fire  
O-No Leakage, No Venting, No Disassembly, No Rupture, No Fire
<table>
<thead>
<tr>
<th>Item</th>
<th>Test Item</th>
<th>Test specification</th>
<th>Judge criteria</th>
<th>Sample(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T3</td>
<td>Vibration test (UN38.3-3)</td>
<td>3-1. Packs are firmly secured to the platform of the vibration machine without distorting the packs in such a manner as to faithfully transmit the vibration. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be repeated 12 times for a total of 3 hours for each of 3 mutually perpendicular to the terminal face.</td>
<td>No mass loss (&lt;0.1%), no leakage, no venting, no disassembly, no rupture and no fire. Battery voltage drop &lt; 10%.</td>
<td>4 packs are standard charged (Pack#1<del>4) 4 packs 50 cycled ending in fully charged states (Pack#5</del>8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3-2. The logarithmic frequency sweep is as follows: 7-18 Hz → 1gn 18-50 Hz → 0.8mm amplitude 50-200 Hz → 8gn</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3-3. All packs weight are measured. The charged packs voltage are measured and recorded.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Test Period

**Start:** 2015/11/24  **End:** 2015/11/25

### Test Equipment

數位電表 Q153, 電子天平 Q090, 振動測試機 Q156

### Major Problem

- 

### Warning Point

- 

### Recommendation

The packs pass the test.

### Vibration Test on Charged Packs

<table>
<thead>
<tr>
<th>No.</th>
<th>Before</th>
<th>After</th>
<th>Voltage residue</th>
<th>mass loss</th>
<th>other event</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OCV (V)</td>
<td>Weight (g)</td>
<td>OCV (V)</td>
<td>Weight (g)</td>
<td>(%)</td>
</tr>
<tr>
<td>1</td>
<td>8.513</td>
<td>133.37</td>
<td>8.506</td>
<td>133.32</td>
<td>99.92%</td>
</tr>
<tr>
<td>2</td>
<td>8.502</td>
<td>133.78</td>
<td>8.495</td>
<td>133.71</td>
<td>99.92%</td>
</tr>
<tr>
<td>3</td>
<td>8.502</td>
<td>133.61</td>
<td>8.494</td>
<td>133.55</td>
<td>99.91%</td>
</tr>
<tr>
<td>4</td>
<td>8.504</td>
<td>133.44</td>
<td>8.496</td>
<td>133.38</td>
<td>99.91%</td>
</tr>
<tr>
<td>5</td>
<td>8.460</td>
<td>133.63</td>
<td>8.452</td>
<td>133.57</td>
<td>99.91%</td>
</tr>
<tr>
<td>6</td>
<td>8.446</td>
<td>133.55</td>
<td>8.440</td>
<td>133.49</td>
<td>99.93%</td>
</tr>
<tr>
<td>7</td>
<td>8.468</td>
<td>133.73</td>
<td>8.459</td>
<td>133.68</td>
<td>99.98%</td>
</tr>
<tr>
<td>8</td>
<td>8.450</td>
<td>133.66</td>
<td>8.443</td>
<td>133.60</td>
<td>99.92%</td>
</tr>
</tbody>
</table>

Note: L-Leakage ; V-Venting ; D-Disassembly ; R-Rupture ; F-Fire
O-No Leakage , No Venting , No Disassembly , No Rupture , No Fire
<table>
<thead>
<tr>
<th>Item</th>
<th>Test Item</th>
<th>Test specification</th>
<th>Judge criteria</th>
<th>Sample(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>T4</strong></td>
<td>Shock test (UN38.3-4)</td>
<td>4-1. Packs shall be secured to the testing machine by means of a rigid mount, which will support all mounting surfaces. 4-2. Packs shall be subjected to a half-sine shock of peak acceleration 150g and pulse duration of 6 milliseconds. Each pack shall be subjected to 3 shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicularly mounting positions of the pack for a total of 18 shocks. 4-3. All batteries weight are measured. The charged cell voltage are measured and recorded.</td>
<td>No mass loss (&lt;0.1%), no leakage, no venting, no disassembly, no rupture and no fire. Battery voltage drop &lt; 10%.</td>
<td>4 packs are standard charged (Pack#1<del>4) 4 packs 50 cycled ending in fully charged states (Pack#5</del>8)</td>
</tr>
</tbody>
</table>

**Test Period**
Start: 2015/11/27  
End: 2015/11/27

**Test Equipment**
數位電表 Q153, 電子天平 Q090, 衝擊測試機 Q154

**Major Problem**
-

**Warning Point**
-

**Recommendation**
The packs pass the test.

---

**Shock Test on Charged Packs**

<table>
<thead>
<tr>
<th>No.</th>
<th>OCV (V)</th>
<th>Weight (g)</th>
<th>OCV (V)</th>
<th>Weight (g)</th>
<th>Voltage residue (%)</th>
<th>Mass loss (%)</th>
<th>Other event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8.506</td>
<td>133.32</td>
<td>8.500</td>
<td>133.31</td>
<td>99.93%</td>
<td>0.00%</td>
<td>O</td>
</tr>
<tr>
<td>2</td>
<td>8.495</td>
<td>133.71</td>
<td>8.490</td>
<td>133.70</td>
<td>99.91%</td>
<td>0.01%</td>
<td>O</td>
</tr>
<tr>
<td>3</td>
<td>8.494</td>
<td>133.55</td>
<td>8.489</td>
<td>133.54</td>
<td>99.94%</td>
<td>0.01%</td>
<td>O</td>
</tr>
<tr>
<td>4</td>
<td>8.496</td>
<td>133.38</td>
<td>8.490</td>
<td>133.37</td>
<td>99.93%</td>
<td>0.01%</td>
<td>O</td>
</tr>
<tr>
<td>5</td>
<td>8.452</td>
<td>133.57</td>
<td>8.448</td>
<td>133.56</td>
<td>99.94%</td>
<td>0.01%</td>
<td>O</td>
</tr>
<tr>
<td>6</td>
<td>8.440</td>
<td>133.49</td>
<td>8.433</td>
<td>133.48</td>
<td>99.92%</td>
<td>0.01%</td>
<td>O</td>
</tr>
<tr>
<td>7</td>
<td>8.459</td>
<td>133.68</td>
<td>8.453</td>
<td>133.67</td>
<td>99.93%</td>
<td>0.01%</td>
<td>O</td>
</tr>
<tr>
<td>8</td>
<td>8.443</td>
<td>133.60</td>
<td>8.438</td>
<td>133.59</td>
<td>99.94%</td>
<td>0.00%</td>
<td>O</td>
</tr>
</tbody>
</table>

**Note:** L-Leakage; V-Venting; D-Disassembly; R-Rupture; F-Fire  
0-No Leakage, No Venting, No Disassembly, No Rupture, No Fire
### T5  
**Short Circuit Test (UN38.3-5)**

1. Packs are placed in to a 55±2°C oven, and exterior packs temperature are monitored.
2. When packs exterior reach 55±2°C, they are shorted by connecting terminals with a copper wire of resistance less than 100m Ohm.
3. The short was continued for more than 1hour or the cell temperature return to 55°C. The packs are observed for a further 6 hours.

**Judge criteria**
- No rupture, no disassembly, no explosion, no fire, no smoke.
- Packs exterior peak temperature <170°C.

**Sample(s)**
- 4 packs are standard charged (Pack#1~4)
- 4 packs 50 cycled ending in fully charged ending (Pack#5~8)

#### Test Period
- **Start:** 2015/12/02  
- **End:** 2015/12/04

#### Test Equipment
- 數位電表 Q153, 資料收集器 Q075, 烘箱 Q171

#### Recommendation
- The packs pass the test.

#### Raw Data

<table>
<thead>
<tr>
<th>No.</th>
<th>Max. Temp. (°C)</th>
<th>Other event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>55.26</td>
<td>O</td>
</tr>
<tr>
<td>2</td>
<td>55.13</td>
<td>O</td>
</tr>
<tr>
<td>3</td>
<td>55.48</td>
<td>O</td>
</tr>
<tr>
<td>4</td>
<td>55.56</td>
<td>O</td>
</tr>
<tr>
<td>5</td>
<td>55.44</td>
<td>O</td>
</tr>
<tr>
<td>6</td>
<td>55.89</td>
<td>O</td>
</tr>
<tr>
<td>7</td>
<td>55.49</td>
<td>O</td>
</tr>
<tr>
<td>8</td>
<td>55.31</td>
<td>O</td>
</tr>
</tbody>
</table>

**Note:**  
- D-Disassembly, R-Rupture, F-Fire  
- O- No Disassembly, No Rupture, No Fire

---

### T6  
**Crush test/Impact test (UN38.3-6)**

1. Cell's diameter > 20mm, Execution impact test.  
(A 9.1 Kg mass is to be dropped from a height of 61±2.5cm onto the sample.)
2. Cell's diameter < 20mm, Execution crush test (The cells are crushed with a 13 KN with the crush tester. Once the force is obtained it is to be released.)

**Judge criteria**
- External temperature of cell does not exceed 170°C and there is no disassembly and no fire within 6 hours of the test.

**Sample(s)**
- 5 cells are 50% charged (Cell #1~5)

#### Test Period
- **Start:** 2015/11/25  
- **End:** 2015/11/25

#### Test Equipment
- 數位電表 Q153, 資料收集器 Q152, 擴壓試驗機 Q437/ 撞擊測試機 Q231

#### Recommendation
- The Cells pass the test.

#### Raw Data

<table>
<thead>
<tr>
<th>No.</th>
<th>Max. Temp. (°C)</th>
<th>Other event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21.12</td>
<td>O</td>
</tr>
<tr>
<td>2</td>
<td>20.74</td>
<td>O</td>
</tr>
<tr>
<td>3</td>
<td>19.93</td>
<td>O</td>
</tr>
<tr>
<td>4</td>
<td>20.56</td>
<td>O</td>
</tr>
<tr>
<td>5</td>
<td>20.85</td>
<td>O</td>
</tr>
</tbody>
</table>

**Note:**  
- D-Disassembly, F-Fire  
- O- No Disassembly, No Fire
### T7 Overcharge test (UN38.3-7)

<table>
<thead>
<tr>
<th>Test specification</th>
<th>Judge criteria</th>
<th>Sample(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-1. The charge current shall be twice the Spec's recommended maximum continuous charge current.</td>
<td>No disassembly, no fire within seven days after the test.</td>
<td>4 packs are fully charged (Pack #9-12)</td>
</tr>
<tr>
<td>7-2. The minimum voltage of the test shall be as follows:</td>
<td></td>
<td>4 packs are 50 times cycled ending in fully charged state (Pack #13-16)</td>
</tr>
<tr>
<td>(a) When the Spec's recommended charge voltage is not more than 18V, the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the battery or 22V.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) When the Spec's recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-3. Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Test Period

Start: 2015/12/01  End: 2015/12/04

### Test Equipment

數位電表 Q153, 資料收集器 Q078, 電源供應器 Q148/Q149/Q150

### Major Problem

- 

### Warning Point

- 

### Recommendation

The packs pass the test.

### Overcharge Test on Charged Packs

<table>
<thead>
<tr>
<th>No.</th>
<th>Charge Voltage(V)</th>
<th>Charge Current(A)</th>
<th>Max. Temp.(°C)</th>
<th>Other event</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td></td>
<td></td>
<td>21.24</td>
<td>O</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td>21.63</td>
<td>O</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td>20.56</td>
<td>O</td>
</tr>
<tr>
<td>12</td>
<td>16.8 V</td>
<td>5.46</td>
<td>20.89</td>
<td>O</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td>19.45</td>
<td>O</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td>22.33</td>
<td>O</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td>21.47</td>
<td>O</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td>20.82</td>
<td>O</td>
</tr>
</tbody>
</table>

### Raw Data

Note: D-Disassembly ; F-Fire / O-No Disassembly , No Fire
<table>
<thead>
<tr>
<th>Item</th>
<th>Test Item</th>
<th>Test specification</th>
<th>Judge criteria</th>
<th>Sample(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T8</td>
<td>Forced discharge test (UN38.3-8)</td>
<td>Cell shall be forced discharged at ambient temperature by connecting it in series with a 12 V D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer.</td>
<td>No disassembly, no fire within seven days after the test. 10 cells are first cycle in fully discharged states (Pack#6<del>15) 10 cells are after 50 cycles ending in fully discharged states (Pack #16</del>25)</td>
<td></td>
</tr>
</tbody>
</table>

**Test Period**

Start: 2015/12/02  
End: 2015/12/04

**Test Equipment**

数位電表 Q153，資料收集器 Q160，電源供應器 Q147/Q236/Q237

**Major Problem**

- 

**Warning Point**

- 

**Recommendation**

The packs pass the test.

<table>
<thead>
<tr>
<th>Forced discharge are first cycle in fully discharged</th>
<th>Forced discharge are after 50 cycles ending in fully discharged</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>Max. Temp. (°C)</td>
</tr>
<tr>
<td>-----</td>
<td>-----------------</td>
</tr>
<tr>
<td>6</td>
<td>60.36</td>
</tr>
<tr>
<td>7</td>
<td>55.24</td>
</tr>
<tr>
<td>8</td>
<td>50.93</td>
</tr>
<tr>
<td>9</td>
<td>47.60</td>
</tr>
<tr>
<td>10</td>
<td>61.14</td>
</tr>
<tr>
<td>11</td>
<td>52.58</td>
</tr>
<tr>
<td>12</td>
<td>58.94</td>
</tr>
<tr>
<td>13</td>
<td>57.63</td>
</tr>
<tr>
<td>14</td>
<td>55.58</td>
</tr>
<tr>
<td>15</td>
<td>60.02</td>
</tr>
</tbody>
</table>

**Note:**

D: Disassembly  /  F: Fire  /  O: No Disassembly, No Fire

**Raw Data**