TEST REPORT

ST/SG/AC.10/11Rev.4

AMENDMENTS TO THE THIRD REVISED EDITION OF THE RECOMMENDATIONS ON THE TRANSPORT OF DANGEROUS GOODS, MANUAL OF TEST AND CRITERIA

(Section 38.3: Lithium batteries)

Report reference No ,..... STR10098014S

Tested by (name+ signature) Fred zou

Approved by (+ signature) Ailis Ma

Date of issue Sep. 13, 2010

Testing laboratory SEM.Test Compliance Service Co., Ltd.

District, Shenzhen, P.R.C. (518101)

Menzon Mils Ma

Testing location As above

Applicant GlobTek, Inc.

Manufacturer GlobTek (Suzhou) Co., Ltd.

Suzhou, Jiangsu 215021, China

Standard ST/SG/AC.10/11Rev.4 section 38.3

Test procedureType approved

Procedure deviation N.A.

Non-standard test method: N.A.

This test report is specially limited to the above client company and product model only, it may not be duplicated without prior written consent of SEM,Test,

Product Name Lithium Polymer Battery

Trademark -

Model/type reference 2G-523450-G2107

Ratings 3.7- 4.2V, 2000mAh(7.4Wh)

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| Particulars: test item vs. test requirements | |
|---|------------------------------|
| Classification: | Small Battery |
| Dimension: | L : 51.9mm |
| | W: 42.6mm |
| | T : 14.2mm |
| Packing Material | ABS |
| Shape | Prismatic |
| Mass of apparatus: | 50g |
| Test Item: | 7 |
| Test 1: Altitude simulation | P |
| Test 2: Thermal Test | P |
| Test 3: Vibration | P |
| Test 4: Shock | P |
| Test 5: External short circuit | P |
| Test 6: Impact | P 💍 |
| Test 7: Overcharge | P |
| Test 8: Forced Discharge | N (No need for batteries.) |
| Possible test case verdicts: | |
| - test case does not apply to the test object | N(.A.) |
| - test object does meet the requirement | P(ass) |
| - test object does not meet the requirement | F(ail) |
| Testing: | |
| Date of receipt of test item | Sep. 03, 2010 |
| Date(s) of performance of test | Sep. 03, 2010- Sep. 11, 2010 |

Test Conclusion:

The Lithium Polymer Battery submitted by GlobTek (Suzhou) Co., Ltd. is tested according to Section 38.3 of Amendments to the Fourth Revised Edition of the Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria (ST/SG/AC.10/11/Rev.4).

Test Result: Pass.

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| | ST/SG/AC.10/11Rev.4 section 3 | 00.3 | 1 |
|----------|---|---|----------|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 38.3 | Lithium batteries | | Р |
| 38.3.1 | Purpose | | Р |
| | This section presents the procedures to be followed for the classification of lithium cells and batteries. | | - |
| 38.3.2 | Scope | | Р |
| 38.3.2.1 | Lithium cells or batteries which differ from a tested type by: | A | Р |
| | a) A Change of more than 0.1g or 20% by mass, whichever is greater, to the cathode, to the anode, or to the electrolyte; | X | <u> </u> |
| | b) A Change that would materially affect the test results. | 2:1 | - |
| 38.3.2.2 | For the purposes of classification, the following definitions apply: | Co | Р |
| | NOTE: Units that are commonly referred to as "battery packs" having the primary function of providing a source of power to another piece of equipment are for purposes of these regulations treated as batteries. | CE | - |
| 38.3.3 | When a cell or battery type is to be tested under this sub-section, the number and condition of cells and batteries of each type to be tested are as follows: | Tests 1 to 5 must be conducted in sequence on the same battery, | Р |
| | a) When testing primary cells and batteries under tests 1 to 5, the following shall be tested: | | N |
| | Ten cells in undischarged states, | | N |
| | Ten cells in fully discharged states, | | N |
| | Four batteries in undischarged states | | N |
| | Four batteries in fully discharged states | | N |
| | b) when testing rechargeable cells and batteries under tests 1 to 5 the following shall be tested: | | Р |
| | Ten cells, at first cycle, in fully charged states. | | N |
| | Ten cells, at first cycle, in fully discharged states. | | N |
| | Four batteries, at first cycle, in fully charged states. | | Р |
| | Four batteries, at first cycle, in fully discharged states. | | Р |
| 5) | Four batteries after fifty cycles ending in fully charged states. | | Р |
| | Four batteries after fifty cycles ending in fully discharged states. | | Р |
| | c) Testing primary and rechargeable cells under test 6(Impact) tested | | Р |
| | For primary cells, five cells in undischarged states and five cells in fully discharged states | | N |
| | For component cells of primary batteries, Five cells in undischarged states and five cells in fully discharged states. | | N |

| | ST/SG/AC.10/11Rev.4 section 3 | 38.3 T | 1 |
|--------|---|---------------------------------|---------|
| Clause | Requirement – Test | Result - Remark | Verdict |
| | for rechargeable cells, five cells at first cycle at 50% of the design rated capacity and firve cells after 50 cycles ending in fully discharged states. | | N |
| | For components cells of rechargeable batteries, five cells at first cycle at 50% of the design rated capacity and five cells after 50 cycles ending in fully discharged states. | | Р |
| | For prismatic cells, ten test cells are required for each of the states of charge being tested, instead of the five described above, so that the procedure can be carried out on five cells along the longitudinal axes and, separately, five cells along the other axes. | | P |
| | d) Testing rechargeable batteries under test 7(Overcharge), the following shall be tested: | ¢0., | Р |
| | Four rechargeable batteries, at first cycle, in fully charged states. | | Р |
| | Four rechargeable batteries, after fifty cycle ending in fully charged states. | | Р |
| | e) testing primary and rechargeable cells under test 8(Forced Discharge) | | N |
| | Ten primary cells in fully discharged states. | This is rechargeable batteries. | N |
| | Ten rechargeable cells, at first cycle in fully discharged states | | N |
| | Ten rechargeable cells after fifty cycles ending in fully discharged states. | | N |
| Ś | M. Comp. | | |

| | T | | 31/3G/AC. | 10/11Rev.4 s | section 3 | ი.ა | | | |
|--------------------------|---|--|----------------------------|------------------------|----------------------------|--------|---------------------------|---|---------------|
| Clause | Requiremen | t – Test | | | | | Result - | Remark | Verdict |
| 38.3.4 | Procedure | | | | | | | | Р |
| | Test 1 to 5 m and 8 should cells or batter | be condu | | | | | | | Р |
| | Test 6 and 8 tested cells o | | | using not ot | herwise | | | | Р |
| | Test 7 may be previously us on cycled bat | ed in test | | | | | | , × | P |
| 38.3.4.1 | Test 1: Altitu | ıde Simu | lation | | | | | | Р |
| 38.3.4.1.1 | Purpose | | | | | | | | Р |
| | This test simu conditions. | ulates air | transport ur | nder low-pres | ssure | | 65 |)•] | - |
| 38.3.4.1.2 Test proced | | re | | | | | | | Р |
| | stored at a pr | essure | | | | 11 | .6 kPa | | - |
| | ambient temp | perature (| 20 ± 5 °C). | | 4 | 24 | °C | | - |
| | Stored times(| (> 6 hou | rs) | | ~~ | 8 h | nours. | | - |
| 38.3.4.1.3 | Requirement | | | | SA | | | | Р |
| | no rupture an each test cell 90% of its vol The requirem | s loss, no leakage, no venting, no disassembly, upture and no fire and if the open circuit voltage of a test cell or battery after testing is not less than of its voltage immediately prior to this procedure. requirement relating to voltage is not applicable to cells and batteries at fully discharged states. | | | | | | no rupture attery after ess than age rior to this | |
| | | ~ | Mass N | l of Test Ba | ttery (g) | | | OCV (V) | |
| Group | × | No. | M1 (before the test) | M2 (after the test) | Mass Loss lin (0.1%) | nit | OCV1 (before the test) | OCV2 (after the test) | OCV (≥90%) |
| | \$ | 01 | 50.00g | 50.00g | 0.00% | ò | 3.932 | 3.932 | 100.0% |
| | first cycle, in | 02 | 50.00g | 50.00g | 0.00% | , D | 3.934 | 3.934 | 100.0% |
| fully charge | d states) | 03 | 50.00g | 50.00g | 0.00% | , D | 3.933 | 3.933 | 100.0% |
| | | 04 | 50.00g | 50.00g | 0.00% | ò | 3.934 | 3.934 | 100.0% |
| 2 | | 05 | 50.00g | 50.00g | 0.00% | , o | 3.930 | 3.930 | 100.0% |
| Group B (af cycles endir | | 06 | 50.00g | 50.00g | 0.00% | , D | 3.932 | 3.932 | 100.0% |
| charged sta | | 07 | 50.00g | 50.00g | 0.00% | b | 3.933 | 3.933 | 100.0% |
| | | 80 | 50.00g | 50.00g | 0.00% | Ď | 3.932 | 3.932 | 100.0% |
| | | 01 | 50.00g | 50.00g | 0.00% | , D | - | - | - |
| | first cycle, in | 02 | 50.00g | 50.00g | 0.00% | Ď | - | - | - |
| fully dischar | ged states) | 03 | 50.00g | 50.00g | 0.00% | Ď | - | - | - |
| | | 04 | 50.00g | 50.00g | 0.00% | b | - | - | - |
| Group D (af | ter fifty | 05 | 50.00g | 50.00g | 0.00% | Ď | - | - | - |

| | ST/SG/AC.10/11Rev.4 section 38.3 | | | | | | | | | |
|--------------------|----------------------------------|----------|--------|--------|-------|----------|--------|---------|--|--|
| Clause | Requiremen | t – Test | | | | Result - | Remark | Verdict | | |
| cycles endir | | 06 | 50.00g | 50.00g | 0.00% | - | - | - | | |
| discharged states) | | 07 | 50.00g | 50.00g | 0.00% | - | - | - | | |
| | | 08 | 50.00g | 50.00g | 0.00% | - | - | - | | |

Remark

- 1. Mass loss (%)=(M1-M2)/M1*100% (Where M_1 is the mass before the test and M_2 is the mass after the
- 2. When mass loss does not exceed the value in Table: Mass loss limit, it shall be considered as "no mass loss".
- 3. the OCV of each test cell after testing is not less than 90% of its voltage immediately prior to this procedure.
 - 4. Ambient temperature: 24 ℃

Conclusion:

SEM. Pest Lithium Polymer Battery had passed altitude simulation test.

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| | 1 | | ST/SG/AC. | 10/11 Rev.4 | section 3 | 38.3 | | _ |
|-------------------------------------|--|--|--|--|--|--|---|---------------|
| Clause | Requiremen | | | | | Result - | Remark | Verdict |
| 38.3.4.2 | Test 2: Ther | mal Test | | | | | | Р |
| 38.3.4.2.1 | Purpose | | | | | | | - |
| | This test assessinternal elect using rapid a | rical conr | nections. The | e test is cond | lucted | | | - |
| 38.3.4.2.2 | Test procedu | re | | | | | Р | |
| | Test temperta | ature and | stored hour | s | | 1) 75 °C , ≥6h | | - |
| | | | | | | 2) -40 °C, ≥6h between test t | | |
| | The maximur | n time int | erval | | | extremes is 30 | | <u> </u> |
| | Test times | | | | | repeated 10 ti | mes | - |
| | After which a for 24 hours | | | | | 24°C | , | - |
| | For large cell to the test ter hours. | | | | | Small battery |) | N |
| 38.3.4.2.3 | Requirement | | | | | | | Р |
| | Cells and bat mass loss, no no rupture ar each test cell 90% of its vo The requirem test cells and | o leakage nd no fire or batter Itage imm nent relati | e, no venting and if the op y after testin nediately prion ng to voltage | , no disasser pen circuit vo g is not less or to this pro e is not appli | mbly, ltage of than cedure. cable to | No mass loss, no venting, no disassembly, and no fire. ba testing is not I 90% of its volt immediately p procedure. | no rupture attery after ess than age | P |
| | | | Mass M | of Test Ba | ttery (g) | | OCV (V) | • |
| Group | | No. | M1 (before the test) | M2 (after the test) | Mass Loss lim (0.1%) | ` | OCV2 (after the test) | OCV (≥90%) |
| | | 01 | 50.00g | 50.00g | 0.00% | 3.932 | 3.916 | 99.59% |
| Group A (at | first cycle, in | 02 | 50.00g | 50.00g | 0.00% | 3.934 | 3.916 | 99.54% |
| fully charge | d states) | 03 | 50.00g | 50.00g | 0.00% | 3.933 | 3.918 | 99.62% |
| | 6 | ⁾ 04 | 50.00g | 50.00g | 0.00% | 3.934 | 3.934 3.913 9 | |
| | X Q Y | 05 | 50.00g | 50.00g | 0.00% | 3.930 | 3.908 | 99.44% |
| Group B (af cycles endir | | 06 | 50.00g | 50.00g | 0.00% | 3.932 | 3.905 | 99.31% |
| charged sta | | 07 | 50.00g | 50.00g | 0.00% | 3.933 | 3.913 | 99.49% |
| CX. |), | 80 | 50.00g | 50.00g | 0.00% | 3.932 | 3.914 | 99.54% |
| 7 | | 01 | 50.00g | 50.00g | 0.00% | - | - | |
| Group C (at | : first cycle, in | 02 | 50.00g | 50.00g | 0.00% | - | - | - |
| fully dischar | ged states) | 03 | 50.00g | 50.00g | 0.00% | - | - | - |
| | | 04 | 50.00g | 50.00g | 0.00% | - | - | - |
| | | 05 | 50.00g | 50.00g | 0.00% | - | - | - |
| Crown D (offer fifth) | | | | I | 1 | | | |
| Group D (af | | 06 | 50.00g | 50.00g | 0.00% | - | - | |
| Group D (af cycles endir discharged | ng in fully | 06 07 | 50.00g 50.00g | 50.00g 50.00g | 0.00% | | - | - |

Remark

- 1. Mass loss (%)=(M1-M2)/M1*100% (Where M_1 is the mass before the test and M_2 is the mass after the test)
- 2. When mass loss does not exceed the value in Table: Mass loss limit, it shall be considered as "no mass loss".
- 3. the OCV of each test cell after testing is not less than 90% of its voltage immediately prior to this procedure.

Still Test Compliance Service

4. Ambient temperature 24°C

Conclusion:

Lithium Polymer Battery had passed thermal test.

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| - | | | ST/SG/AC. | 10/11Rev.4 | section 3 | 88.3 | | |
|----------------------------|---|--|----------------------------------|---------------------------|----------------------------|----------|---|---------------|
| Clause | Requiremen | t – Test | | | | Result - | Remark | Verdict |
| 38.3.4.3 | Test 3: Vibra | ition | | | Р | | | |
| 38.3.4.3.1 | Purpose | | | | | | | Р |
| | This test simu | ulates vib | ration during | g transport. | | | | - |
| 38.3.4.3.2 | Test procedu | re | | | | | | Р |
| | Cells and bat of the vibration such a manner The vibration | on machir er as to fa | ne without di aithfully trans | storting the o | | | - | |
| | logarithmic | Silali De | a siriusoluai | wavelolli w | | X | P | |
| | Duration | | | | 15min | | - | |
| | Frequency ra | nge | | | | 7Hz200Hz | 7Hz | - |
| | Amplitude | | | | | 0.8mm | | - |
| | hours for eac | is cycle shall be repeated 12 times for a total of 3 urs for each of three mutually perpendicular punting positions of the cell. | | | | | | - |
| 38.3.4.3.3 | Requirement | | | | • | | | Р |
| | mass loss, no no rupture an each test cell 90% of its vo The requirem | ells and batteries meet this requirement if there is no lass loss, no leakage, no venting, no disassembly, or rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 10% of its voltage immediately prior to this procedure. There is no mass loss, no leakage, no venting, no disassembly, no rupture and no fire. There is no mass loss, no leakage, no venting, no disassembly, no rupture and no fire. | | | | | | |
| | | | Mass M | of Test Ba | ttery (g) | | OCV (V) | • |
| Group | | No. | M1 (before the test) | M2 (after the test) | Mass Loss lim (0.1%) | , | OCV2 (after the test) | OCV (≥90%) |
| | | 01 | 50.00g | 50.00g | 0.00% | 3.916 | 3.916 | 100.0% |
| Group A (at | first cycle, in | 02 | 50.00g | 50.00g | 0.00% | 3.916 | 3.916 | 100.0% |
| fully charged | | 03 | 50.00g | 50.00g | 0.00% | 3.918 | 3.918 | 100.0% |
| | X | 04 | 50.00g | 50.00g | 0.00% | 3.913 | OCV (V) OCV2 (after the test) 3.916 3.916 | 100.0% |
| | Ş | 05 | 50.00g | 50.00g | 0.00% | 3.908 | 3.908 | 100.0% |
| Group B (aft cycles ending | | 06 | 50.00g | 50.00g | 0.00% | 3.905 | 3.905 | 100.0% |
| charged stat | | 07 | 50.00g | 50.00g | 0.00% | 3.913 | 3.913 | 100.0% |
| | | 80 | 50.00g | 50.00g | 0.00% | 3.914 | 3.914 | 100.0% |
| 2, | | 01 | 50.00g | 50.00g | 0.00% | - | - | - |
| | first cycle, in | 02 | 50.00g | 50.00g | 0.00% | - | - | - |
| fully discharg | ged states) | 03 | 50.00g | 50.00g | 0.00% | - | - | - |
| | | 04 | 50.00g | 50.00g | 0.00% | - | - | - |
| | | 05 | 50.00g | 50.00g | 0.00% | - | - | - |
| Group D (after fifty | | 06 | 50.00g | 50.00g | 0.00% | - | - | - |
| | cycles ending in fully | | | | | | | |
| | | 07 | 50.00g | 50.00g | 0.00% | - | - | |
| cycles endin | | 07 08 | 50.00g 50.00g | 50.00g 50.00g | 0.00% | | - | - |

- 1. Mass loss (%)=(M1-M2)/M1*100% (Where M_1 is the mass before the test and M_2 is the mass after the test)
- 2. When mass loss does not exceed the value in Table: Mass loss limit, it shall be considered as "no mass loss".
- 3. the OCV of each test cell after testing is not less than 90% of its voltage immediately prior to this procedure.
 - 4. Ambient temperature: 23°C

Conclusion:

Lithium Polymer Battery had passed vibration test. Still Test Compliance Service

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| | 1 | | SI/SG/AC | C.10/Rev.4 s | ection 38 | 5.3 | | | |
|--------------------------|---|---|---|---|--|------------|---|-----------------------------|---------------|
| Clause | Requiremen | | | | | | Result - | Remark | Verdict |
| 38.3.4.4 | Test 4: Shoo | k | | | | | | | Р |
| 38.3.4.4.1 | Purpose | | | | | | | | Р |
| | This test sime | ulates pos | ssible impac | ts during tra | nsport. | | | | - |
| 38.3.4.4.2 | Test procedu | ire | | | | | | | Р |
| | Test cells and machine by rall mounting | neans of | a rigid moun | it which will s | _ | Th | is is small b | atteries. | - |
| | a half-sine sh | nock of pe | ak accelera | tion | | 15 | 0 g _n | X | O - |
| | pulse duratio | n | | | | 6m | าร | | - |
| | the positive of | lirection fo | ollowed | | | thr | ee times sh | ocks | - |
| | Each cell or to in the positive negative dire mounting positive 18 shocks. | e directior ction of th | n followed by aree mutually | ks in the ılar | | · 6 |)•] | - | |
| 38.3.4.4.3 | Requirement | | | | • | | | | Р |
| | Cells and bat mass loss, r no rupture ar each test ce 90% of its vo The requirem test cells and | no leakag nd no fire Il or batte oltage imn nent relati | le, no venting and if the opery after test nediately pring to voltage | ng, no disas ben circuit vo ting is not le or to this pro e is not appl | ssembly, oltage of ess than ocedure. icable to | lea dis | ere is no ma akage, no ve assembly, i d no fire. | | P |
| | | | Mass N | of Test Ba | ttery (g) | | | OCV (V) | |
| Group | | No. | M1 (before the test) | M2 (after the test) | Mass Loss lim (0.1%) | nit | OCV1 (before the test) | OCV2 (after the test) | OCV (≥90%) |
| | | 01 | 50.00g | 50.00g | 0.00% | , | 3.916 | 3.916 | 100.0% |
| Group A (at | first cycle, in | 02 | 50.00g | 50.00g | 0.00% |) | 3.916 | 3.916 | 100.0% |
| fully charge | d states) | 0 3 | 50.00g | 50.00g | 0.00% |) | 3.918 | 3.918 | 100.0% |
| | x (2) | 04 | 50.00g | 50.00g | 0.00% | , | 3.913 | 3.913 | 100.0% |
| | | 05 | 50.00g | 50.00g | 0.00% | , | 3.908 | 3.908 | 100.0% |
| Group B (af cycles endi | | 06 | 50.00g | 50.00g | 0.00% |) | 3.905 | 3.905 | 100.0% |
| charged sta | | 07 | 50.00g | 50.00g | 0.00% | , | 3.913 | 3.913 | 100.0% |
| | | 08 | 50.00g | 50.00g | 0.00% |) | 3.914 | 3.914 | 100.0% |
| | | 01 | 50.00g | 50.00g | 0.00% |) | - | - | - |
| | t first cycle,in | 02 | 50.00g | 50.00g | 0.00% |) | - | - | - |
| fully dischar | rged states) | 03 | 50.00g | 50.00g | 0.00% |) | - | - | - |
| | | 04 | 50.00g | 50.00g | 0.00% |) | - | - | - |
| | | 05 | 50.00g | 50.00g | 0.00% |) | - | - | - |
| Group D (at cycles endir | | 06 | 50.00g | 50.00g | 0.00% |) | - | - | _ |
| discharged | | 07 | 50.00g | 50.00g | 0.00% | , | - | - | - |
| | | 08 | 50.00g | 50.00g | 0.00% | , | - | - | - |

Remark

- 1. Mass loss (%)=(M1-M2)/M1*100% (Where M_1 is the mass before the test and M_2 is the mass after the
- 2. When mass loss does not exceed the value in Table: Mass loss limit, it shall be considered as "no mass loss".
- 3. the OCV of each test cell after testing is not less than 90% of its voltage immediately prior to this procedure.
- 4. Ambient temperature: 24°℃

Conclusion:

Lithium Polymer Battery had passed shock test.

SIM. Test compliance service

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| | Ι | | | 11Rev.4 section 3 | | |
|----------------|--|-----------------------|--|-------------------|---|---------|
| Clause | Requireme | | | | Result - Remark | Verdict |
| 38.3.4.5 | Test 5: Ext | ernal Sh | ort Circuit | | | Р |
| 38.3.4.5.1 | Purpose | | | | | Р |
| | This test sir | nulates a | an external short c | ircuit. | | Р |
| 38.3.4.5.2 | Test proced | lure | | | | Р |
| | | that its | be tested shall be external case tem | | | - |
| | Short circuit of less than | | n with a total Exte | ernal resistance | | - |
| | | | nust be observed f be concluded. | or a further six | • | - |
| | This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to 55°C | | | | | - |
| 38.3.4.5.3 | Requiremen | nt | | | | Р |
| | external ten | nperature disassem | neet this requirem e does not exceed ably, no rupture ar | l 170 °C and | Battery external temperature does not exceed 170 °C, and there is no disassembly, no fire and no rupture within six hours of this test | P |
| Group | | No. | External Highest Temperature (°C) | Criteria | | Result |
| Group A | | 01 | 56.7℃ | | temperature does not | Р |
| (at first cycl | | 02 | 56.5℃ | | and there is no disassembly, | Р |
| charged sta | ites) | 03 | 56.3℃ | test | upture within six hours of this | Р |
| | | 04 | 56.4℃ | lesi | | Р |
| Group B | | 05 | 56.8℃ | | | Р |
| | ycles ending | <u> </u> | 56.3℃ | | | Р |
| in fully char | ged states) | 07 | 55.4℃ | | | Р |
| | | 80 | 56.2℃ | | | Р |
| Group C | y | 01 | 56.4℃ | | temperature does not | Р |
| (at first cycl | | 02 | 56.1℃ | exceed 170 °C, | and there is no disassembly, | Р |
| discharged | states) | 03 | 56.5℃ | | upture within six hours of this | Р |
| ン, | | 04 | 56.8℃ | test | | Р |
| Group D | | 05 | 56.3℃ | | | Р |
| (after fifty c | ycles ending | 06 | 56.4℃ | | | Р |
| in fully discl | narged | 07 | 56.2℃ | 1 | | P |
| states) | | 08 | 56.8℃ | 1 | | P |
| | | | | ů. | | |

Conclusion:

Lithium Polymer Battery had passed external short circuit test.

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| 38.3.4.6.1 P 38.3.4.6.2 To 38.3.4.6.2 To | axis parallel he longitudi surface lying Prismatic ce ts longitudir | act nulates a ure eight ar sition: ell is to be to the fla inal axis of g across | e impacted with its at surface and per of the 15.8 mm dithe centre of the to be rotated 90 errors. | rpendicular to iameter curved test sample, | Result - Remark The test sample Component cell of rechargeable batteries. 61±2.5cm, 9.1Kg 15.8mm | P P P P |
|---|--|--|---|--|--|---------|
| 38.3.4.6.1 P TI 38.3.4.6.2 To | Purpose This test sim Test proced Dropped homass diameter b Impact pose Prismatic ce axis parallel the longitudia surface lying Prismatic ce ts longitudir | nulates a ure eight ar sition: ell is to be to the fla inal axis of g across | e impacted with it at surface and pe of the 15.8 mm di the centre of the to be rotated 90 | rpendicular to iameter curved test sample, | Component cell of rechargeable batteries. 61±2.5cm, 9.1Kg | P P P |
| TI 38.3.4.6.2 To | This test sim Test proced Dropped himass diameter b Impact pos Prismatic ce axis parallel he longitudi surface lying Prismatic ce ts longitudir | eight ar sition: ell is to be to the flainal axis of across | e impacted with it at surface and pe of the 15.8 mm di the centre of the to be rotated 90 | rpendicular to iameter curved test sample, | 9.1Kg | P P |
| 38.3.4.6.2 To | Dropped he mass diameter be Impact pose prismatic ce axis parallel he longitudi surface lying Prismatic ce ts longitudir | eight ar sition: ell is to be to the flainal axis of across | e impacted with it at surface and pe of the 15.8 mm di the centre of the to be rotated 90 | rpendicular to iameter curved test sample, | 9.1Kg | P |
| - I | Dropped homass diameter books Impact poss Prismatic ce axis parallel the longitudio surface lying Prismatic ce ts longitudir | eight ar sition: ell is to be to the flatinal axis of across | at surface and per of the 15.8 mm di the centre of the to be rotated 90 | rpendicular to iameter curved test sample, | 9.1Kg | - - |
| - I - I P ax th st P its | mass diameter b Impact pos Prismatic ce axis parallel the longitudi surface lying Prismatic ce ts longitudir | ar sition: ell is to be to the fla inal axis of g across | at surface and per of the 15.8 mm di the centre of the to be rotated 90 | rpendicular to iameter curved test sample, | 9.1Kg | |
| - d P ax th su P its | diameter b Impact pos Prismatic ce axis parallel he longitudi surface lying Prismatic ce ts longitudir | sition: all is to be to the flatinal axis of across all is also | at surface and per of the 15.8 mm di the centre of the to be rotated 90 | rpendicular to iameter curved test sample, | | |
| P ax th su P its | Impact pos Prismatic ce axis parallel he longitudi surface lying Prismatic ce ts longitudir | sition: all is to be to the flatinal axis of across all is also | at surface and per of the 15.8 mm di the centre of the to be rotated 90 | rpendicular to iameter curved test sample, | 15.8mm | |
| P ax th su P its | Prismatic ce axis parallel he longitudi surface lying Prismatic ce ts longitudir | ell is to be to the flatinal axis of g across | at surface and per of the 15.8 mm di the centre of the to be rotated 90 | rpendicular to iameter curved test sample, | 60. | Р |
| its | ts longitudir | | | | | |
| | | | o that both the wi | ide and narrow | | |
| 38.3.4.6.3 R | Requiremen | nt | | | | Р |
| th th | heir externa | al temper | nt cells meet this ature does not ex ly and no fire with | ceed 170°C and | After the test, The, component Cells external temperature does not exceed 170°C and there is no disassembly and no fire within six hours of this test. | P |
| Group | | No. | Component cells external temperature (℃) | Criteria | | Result |
| Group A, | | 01 | 25.6℃ | | Cells external temperature | Р |
| at first cycle at | | 02 | 25.3 ℃ | | I 170℃ and there is no I no fire within six hours of | Р |
| the design rate capacity (Horiz | | 03 | 25.4℃ | this test. | THO THE WILLIAM SIX HOURS OF | Р |
| | 5 | 04 | 25.5℃ | - | | Р |
| | VO. | 05 | 25.8℃ | - | | Р |
| Group B, | * | 06 | 25.1℃ | - | | Р |
| at first cycle at | t 50% of | 07 | 26.2℃ | - | | Р |
| the design rate | | 08 | 25.7℃ | | | Р |
| capacity (Vertice | icai) | 09 | 25.2℃ | 1 | | Р |
| | | 10 | 25.3℃ | 1 | | Р |
| Group C, | | 11 | 25.4℃ | The component | Cells external temperature | P |
| after 50 cycles | | 12 | 25.5℃ | does not exceed | I 170℃ and there is no | Р |
| in fully discharged states (Horizon | - | 13 | 25.2℃ | disassembly and this test. | d no fire within six hours of | Р |
| (| , | 14 | 25.4℃ | - | | Р |
| | - | 15 | 25.6℃ | - | | Р |

| The component Cells external temperature P | after 50 cycles ending in fully discharged states (Vertical) 17 | | , , | | | |
|--|---|-------------------------|-----------|---------------|-----------------|-------------|
| in fully discharged states (Vertical) 18 | in fully discharged states (Vertical) 18 | | 16 | 25.7℃ | | Р |
| states (Vertical) 18 | states (Vertical) 18 | | 17 | 25.2 ℃ | | Р |
| Ambient temperature: 24.0°C Conclusion: Lithium Polymer Battery had passed Impact test. | 20 25.2°C Ambient temperature: 24.0°C Conclusion: Lithium Polymer Battery had passed Impact test. | | 18 | 25.5℃ | | Р |
| Ambient temperature: 24.0°C Conclusion: Lithium Polymer Battery had passed Impact test. | Ambient temperature: 24.0°C Conclusion: Lithium Polymer Battery had passed Impact test. | | 19 | 25.4℃ | | Р |
| Conclusion: Lithium Polymer Battery had passed Impact test. | Conclusion: Lithium Polymer Battery had passed Impact test. | | 20 | 25.2℃ | | Р |
| Lithium Polymer Battery had passed Impact test. | Lithium Polymer Battery had passed Impact test. | Ambient temperature: 24 | 1.0℃ | | | |
| SIM. Test Compliance Service | SEM. Test compliance service | | mer Batte | ery had passe | ed Impact test. | <i>></i> |
| SEM. Test Complitalis | Still. Test Complitative | | | | ceservice | |
| | | SEM. | | | | |

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| | 1 | ST/SG/AC.10/1 | 11Rev.4 section | 1 | T |
|-------------|--|--|--------------------------------------|--|---------|
| Clause | Requirement – Tes | t | | Result - Remark | Verdict |
| 38.3.4.7 | Test 7: Overcharge | | | | Р |
| 38.3.4.7.1 | Purpose | | | | Р |
| | This test evaluates t battery to withstand | | | | - |
| 38.3.4.7.2 | Test procedure | | | | Р |
| | The charge current | | | 2×1000=2000mA, Twice the manufacturer's recommended maximum continuous charge current | P |
| | The minimum voltag | e: | | | Р |
| | a) the minimum volta manufacturer's reco more than 18V). | | | 2×4.2=8.4V, the lesser of two times the maximum charge voltage of the battery or 22V, | Р |
| | b) the minimum volta manufacturer's reco than 18V). | | | CE | N |
| | Ambient temperature | 9. | | 24℃ | - |
| | The duration of the t | est. | C C Y | 24 hours | - |
| 38.3.4.7.3 | Requirement | | ~ | | Р |
| | Rechargeable batter is no disassembly ar test. | ies meet this requ nd no fire within se | irement if there even days of the | There is no disassembly and no fire within seven days of the test. | Р |
| Group | | No. | Criteria | | Result |
| Group A | | 01 | | ssembly and no fire within | Р |
| states) | e,in fully charged | 02 | seven days of th | ne test. | Р |
| • , | | 03 | | | Р |
| | | 04 | | | Р |
| Group B | ycles ending in fully | 05 | | | Р |
| charged sta | | 06 | | | Р |
| | Mar. | 07 | | | Р |
| 5 | · | 08 | | | Р |
| Ambient ter | mperature: 24 ℃ | | | | |

Conclusion:

Lithium Polymer Battery had passed overcharge test.

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| Clause | ST/SG/AC.10/11Rev.4 section 3 | T | Vardio |
|------------|---|---------------------------------|---------|
| Clause | Requirement – Test | Result - Remark | Verdict |
| 38.3.4.8 | Test 8: Forced discharge | This is rechargeable batteries. | N |
| 38.3.4.8.1 | Purpose | | N |
| | This test evealuates the ability of a primary or a rechargeable cell to withstand a forced discharge condition. | | - |
| 38.3.4.8.2 | Test procedure | | N |
| | Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12 V DC, power supply at an initial current equal to the maximum discharge current specified by the manufacturer. | | N |
| | The specified discharge current is to be obtained by connecting a resistive load of the appropriate size and rating in series with the test cell, Each cell shall be forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in ampere) | YC CO | N |
| 38.3.4.8.3 | Requirement | | N |
| | Primary or rechargeable cells meet this requirement if there is no disassembly and no fire within seven day of the test. | | N |
| S | M. Compliant | | |

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Photos

Model: 2GL-523450-G2107



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***** End of Report *****

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