TEST REPORT

Report No.: HN80013/2011
Page: 1 of 7
Date: August 30, 2011

GLACIALTECH INC.
9FL, NO. 352, SEC. 2,
JUNG SHAN RD., JUNG HE CITY,
TAIPEI, TAIWAN

The following merchandise was submitted and identified by the vendor as:
Product Description: LED Driver
Style/ Item No.: GP-HS15P-24VZZZ/ No.1
Quantity: Total 1 piece

We have tested the submitted sample(s) as requested and the following results were obtained:
Test Required: Test for Degrees of Protection Provided by Enclosures

<table>
<thead>
<tr>
<th>IP Code</th>
<th>IP67</th>
</tr>
</thead>
<tbody>
<tr>
<td>First characteristic numeral</td>
<td>Degrees of protection against access to hazardous parts and against solid foreign objects</td>
</tr>
<tr>
<td>Second characteristic numeral</td>
<td>Degrees of protection against ingress of water</td>
</tr>
</tbody>
</table>

Test Results: Submittals sample(s) comply with the requirement and acceptance conditions of IEC 60529 Edition 2.1: 2001-02 Degrees of Protection Provided by Enclosures -- IP67

The detailed description of test result, please see attached sheet(s).

Signed for and on behalf of SGS TAIWAN Ltd.

Terence Hsieh
Department Manager
Test for Degrees of Protection Provided by Enclosures:

### Test Equipment:

<table>
<thead>
<tr>
<th>Name</th>
<th>Brand</th>
<th>Model</th>
<th>Serial No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 mm Test Wire Probe</td>
<td>ED&amp;D</td>
<td>TRP-02</td>
<td>B0050180</td>
</tr>
<tr>
<td>Digital Force Gauge</td>
<td>ALGOL</td>
<td>HF-50</td>
<td>HF-106764</td>
</tr>
<tr>
<td>Dust Tester</td>
<td>T-MACHINE</td>
<td>TMJ-9723C</td>
<td>T-23-050411</td>
</tr>
<tr>
<td>IPX7/IPX8 Immersion Tank</td>
<td>Self-made</td>
<td>SGS-ETR-0201</td>
<td>000001</td>
</tr>
<tr>
<td>Programmable DC Electronic Load</td>
<td>Chroma</td>
<td>63006</td>
<td>630060001756</td>
</tr>
</tbody>
</table>

### Lab Environmental Conditions:

- Ambient temperature: 25 ± 3°C
- Relative humidity: 55 ± 20%RH

### Test Method/ Specification:

#### 1. Test for protection against access to hazardous parts:

**Test method:** According to IEC 60529 Edition 2.1: 2001-02--IP67

The test wire with 1.0 mm in diameter and 100 mm long is pushed against or inserted through any openings of the enclosure with the force specified in Table 6 in IEC 60529 Edition 2.1: 2001-02. Examine whether the test wire touches the hazardous live parts inside the enclosure or not.

- Test force: 1 N ± 10%

#### 2. Test for protection against solid foreign objects:

**Test method:** IEC 60529 Edition 2.1: 2001-02--IP6X

**Type of dust:** Talcum powder

- The amount of dust: 2 kg
- The chamber size: 1 m³
- The maximum depression: -20 mbar

**Test duration:** 8 hours

- Examine the protection against ingress of dust of specimen(s) and perform functional check after this test.
- Functional check: Connect the specimen with rated power 110 VAC then examine whether the DC voltage output function of specimen could be work normally or not.
Test Method/Specification—Continued:

3. Test for protection against water:


Test means: Completely immerse the specimen in water in its service position as specified by client.

Test condition: See below items marked “●”.

- The lowest point of enclosures with a height less than 850 mm is located 1000 mm below the surface of the water
- The highest point of enclosures with a height equal to or greater than 850 mm is located 150 mm below the surface of the water

Test duration: 30 minutes

Test device: As shown in photo 7, 8

Examine the protection against ingress water of specimen(s) and perform functional check after this test.

Functional check: Connect the specimen with rated power 110VAC then examine whether the DC voltage output function of specimen could be work normally or not.
TEST REPORT

Specimen:
Style/ Item No.: GP-HS15P-24VZZZ/ No.1
Quantity: Total 1 piece

Test Result:
A. Degrees of protection against access to hazardous parts and against solid foreign objects (IP6X)
A-1 Test for protection against access to hazardous parts (IP6X)

<table>
<thead>
<tr>
<th>Check Item</th>
<th>Style/ Item No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Does the test wire penetrate any openings of the enclosure?</td>
<td>No</td>
</tr>
<tr>
<td>2 (followed check item 1) If the test wire penetrates any openings of the enclosure, does the test wire touch any hazardous live parts or any hazardous mechanical parts?</td>
<td>N/A</td>
</tr>
<tr>
<td>3 (followed check item 2) Does adequate clearance be kept between the test wire and hazardous live parts or hazardous mechanical parts?</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Note 1: N/A means “Not Applicable”.
Note 2: The check items in this test report for inspecting the degree of protection provided by enclosures are reference to the requirements specified in IEC 60529 Edition 2.1: 2001-02 and in accordance with the acceptance conditions specified by client.

A-2 Test for protection against solid foreign objects (IP6X)

<table>
<thead>
<tr>
<th>Check Item</th>
<th>Style/ Item No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Does any dust deposit inside the enclosure?</td>
<td>No</td>
</tr>
<tr>
<td>2 Functional Check</td>
<td>Normal</td>
</tr>
</tbody>
</table>

Note 1: N/A means “Not Applicable”.
Note 2: The check items in this test report for inspecting the degree of protection provided by enclosures are reference to the requirements specified in IEC 60529 Edition 2.1: 2001-02 and in accordance with the acceptance conditions specified by client.
### Test Result--Continued:

#### B. Degree of protection against ingress of water (IPX7)

<table>
<thead>
<tr>
<th>Check Item</th>
<th>Style/ Item No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does any water enter the enclosure?</td>
<td>GP-HS15P-24VZZZ/ No.1</td>
</tr>
<tr>
<td>2. (followed check item 1) If any water has entered, does the water accumulate near the cable end or live parts?</td>
<td>N/A</td>
</tr>
<tr>
<td>2.1 (followed check item 2) Does the water be sufficient to interfere with the correct operation of the equipment or impair safety?</td>
<td>N/A</td>
</tr>
<tr>
<td>2.2 (followed check item 2.1) Does the water deposit on insulation parts where it could lead to tracking along the creepage distances?</td>
<td>N/A</td>
</tr>
<tr>
<td>2.3 (followed check item 2.2) Does the water reach live parts or windings not designed to operate when wet?</td>
<td>N/A</td>
</tr>
<tr>
<td>3. Functional Check</td>
<td>Normal</td>
</tr>
</tbody>
</table>

Note 1: N/A means “Not Applicable”.

Note 2: The check items in this test report for inspecting the degree of protection provided by enclosures are reference to the requirements specified in IEC 60529 Edition 2.1: 2001-02 and in accordance with the acceptance conditions specified by the client.
**TEST REPORT**

Report No.: HN80013/2011  
Page: 6 of 7

Test Photos:

1. Appearance of specimen: GP-HS15P-24VZZZ

2. Functional Check

3. Test for protection against access to hazardous parts

4. Test for protection against access to hazardous parts

5. Test for protection against solid foreign objects (Dust test)

6. Test for protection against solid foreign objects (Dust test)
7. Test for protection against water
8. Test for protection against water

--- The End of Test Report ---