
Test Report

Report No: EL01-2104001
Sample Description: SBC for 24 kV 250A Straight Connector
Date of Issue: 2021/04/08

Laboratory: Chardon Taiwan Test Lab.
Address: No. 37 Min-Chie Road Tung Lo Industrial Park Miao Li, Taiwan 366
Tel: +886-37-984385 #123
Fax: +886-37-984770



Approved by:

Boris Hsieh



Information

Test Type: Verification Test
Type or Part No. DTLLE25-50-1L / SBC
Quantity of Parts: 13 pcs
Date of Receipt: 2020/10/22
Date of Test: 2020/10/23 ~ 2020/11/02
Compliance: ANSI/IEEE Std. C37.41-2016 / IEC 61238-1-1-2018
Client: Chardon Taiwan Sales & Customer Service Department
Address: No. 37 Min-Chie Road Tung Lo Industrial Park Miao Li, Taiwan 366
Manufacturer: Chardon Taiwan Group
Address: No. 37 Min-Chie Road Tung Lo Industrial Park Miao Li, Taiwan 366
Test Laboratory: Chardon Taiwan Test Laboratory
Address: No. 37 Min-Chie Road Tung Lo Industrial Park Miao Li, Taiwan 366
Disposition of Sample: Scrap 90 days after report date.

Summary Table

| Item | Test Name | Page |
|------|------------------------|-------|
| 1 | Temperature rise tests | 3 ~ 4 |
| 2 | Mechanical tests | 5 ~ 7 |

Notice:

1. There are 7 pages in this report, including the cover page; The Test Report has to be presented, if necessary, as complete copy, not part of it.
2. The contents of this report is for reference only, not for advertising, general public or any other commercial purposes.
3. The article(s) \ name of the article(s) to be tested and Sampler(s) is supplied by the applicant ; 「 Chardon Taiwan Test Lab. 」 is responsible for carrying out necessary test procedures only.
4. The Test Report is invalid, if it is modified or duplicated without 「 Chardon Taiwan Test Lab. 」 permission. We does not guarantee the reported values in the Report when test is done by using other test pieces. The Test Report may not be used as evidence in a court of law.

1. Temperature rise test

Object

To verify the SBC that the parts meet ANSI/IEEE Std. C37.41-2016 Clause 11 Temperature rise tests.

Testing Samples

SBC for 24 kV 250A Straight Connector 4 PCS

Procedure and Testing Spec

The ambient temperature shall be determined by taking the reading from a thermocouple (or thermometer) placed between 30 cm (12 in) and 1 m (33 in) from the side of the device.

The smallest size of the oil cup employed in any case shall consist of a metal cylinder with 25 mm (1 in) diameter and 50 mm (2 in) height.

During the last quarter of the test period, the change of ambient air temperature shall not exceed 1 °C in 1 h.

When a fuse is immersed in an insulating liquid, the temperature of the liquid (ambient liquid temperature) shall be measured below and close to the device (that is, in the liquid that cools the device).

The test current shall be applied continuously until three consecutive temperature readings taken at 30 min intervals show a maximum variation of 1 °C in the temperature-rise above ambient.

Results

| Temperature (°C) | | | | | | |
|------------------|--|------------|------------|------------|------------|------|
| Cycle | Cable (50mm) | Sample No. | | | | Room |
| | | 2010024-01 | 2010024-02 | 2010024-03 | 2010024-04 | |
| 1 | 149.9 | 80.2 | 78.4 | 82.0 | 80.0 | 21.8 |
| 2 | 148.4 | 80.1 | 78.1 | 81.7 | 79.7 | 22.0 |
| 3 | 149.4 | 82.4 | 78.4 | 83.4 | 80.3 | 22.3 |
| Average | 149.2 | 80.9 | 78.3 | 82.4 | 80.0 | 22.0 |
| Temp. rise | 127.2 | 58.9 | 56.3 | 60.4 | 58.0 | N/A |
| Note | 1. Test current: 250A 2. Installation torque: 9.5Nm | | | | | |

Test photo



Test sample



Temperature rise tests

CHARDON
GROUP

2. Mechanical test

Object

To verify the SBC that the parts meet IEC 61238-1-1-2018 Clause 7 Mechanical tests.

Testing Samples

SBC for 24 kV 250A Straight Connector 9 PCS

Procedure and Testing Spec

The test shall be made on three additional connectors having the same combination of conductors and installation procedure as used for the electrical test. The recommended conductor length between connectors or between connector and tensile test machine jaws is ≥ 500 mm. The rate of application of the load shall not exceed 10 N per square millimeter of nominal cross-sectional area and per second up to 25 % of the value in Table 4 in order to mark the conductor relatively to the connector, then up to the value in Table 4, which is then maintained for 1 min.

The applicable tolerance for applying the mechanical load shall be within ± 5 %.

When the axes of two conductors are not aligned, the connector shall be fixed and the force applied in the axis of the clamping channel on each conductor core. One sample of connector shall be used per tensile test.

For example for a branch connector as shown in Figure 4 d), six connectors are needed, three samples are required for testing the main conductor and three samples for the branch conductor.

Results

| Sample No. | Mechanical load | Load time | Results |
|------------|--|-----------|-------------------------------|
| 2010024-05 | 2.001kN | 60s | Normal |
| | 3.983kN | N/A | The cable is broken, test end |
| 2010024-06 | 2.001kN | 60s | Normal |
| | 4.095kN | N/A | The cable is broken, test end |
| 2010024-07 | 2.001kN | 60s | Normal |
| | 4.083kN | N/A | The cable is broken, test end |
| Note | 1. Test cable: 50mm ² 2. Installation torque: 9.54Nm | | |

| Sample No. | Mechanical load | Load time | Results |
|------------|---|-----------|-------------------------------|
| 2010024-08 | 3.802kN | 60s | Normal |
| | 7.148kN | N/A | The cable is broken, test end |
| 2010024-09 | 3.801kN | 60s | Normal |
| | 7.641kN | N/A | The cable is broken, test end |
| 2010024-10 | 3.801kN | 60s | Normal |
| | 6.531kN | N/A | The cable is broken, test end |
| Note | 1. Test cable: 95mm ² 2. Installation torque: 14.03Nm | | |

| Sample No. | Mechanical load | Load time | Results |
|------------|--|-----------|-------------------------------|
| 2010024-11 | 4.803kN | 60s | Normal |
| | 8.753kN | N/A | The cable is broken, test end |
| 2010024-12 | 4.803kN | 60s | Normal |
| | 8.981kN | N/A | The cable is broken, test end |
| 2010024-13 | 4.803kN | 60s | Normal |
| | 9.052kN | N/A | The cable is broken, test end |
| Note | 1. Test cable: 120mm ² 2. Installation torque: 17.03Nm | | |

Test photo



Test sample - 50mm²



Test sample - 95mm²



Test sample - 120mm²



Mechanical test