Test Report issued under the responsibility of:

# TEST REPORT

## IEC 60950-1
## Information technology equipment – Safety – Part 1: General requirements

| | |
|---|---|
| **Report Number. .....:** | E135494-A109-CB-1 |
| **Date of issue .....:** | 2016-08-25 ; Amendment 3 : 2020-07-21 |
| **Total number of pages.....** | 22 |
| **Name of Testing Laboratory preparing the Report .....:** | UL VS Limited<br>Unit 1-3 Horizon, Wade Road, Kingsland Business Park, Basingstoke RG24 8AH, United Kingdom |
| **Applicant's name .....:** | TDK-LAMBDA UK LTD |
| **Address .....:** | KINGSLEY AVE<br>ILFRACOMBE<br>EX34 8ES UNITED KINGDOM |
| **Test specification:** | |
| **Standard.....:** | IEC 60950-1:2005, AMD1:2009, AMD2:2013 |
| **Test procedure .....:** | CB Scheme |
| **Non-standard test method .....:** | N/A |
| **Test Report Form No. .....:** | IEC60950_1G |
| **Test Report Form(s) Originator ....:** | SGS Fimko Ltd |
| **Master TRF.....:** | Dated 2019-07-02 |



If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

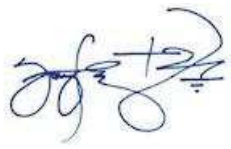
**This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.**

**General disclaimer:**

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

| | |
|---|---|
| **Test item description ..... :** | AC-DC Power Supply |
| **Trade Mark ..... :** | TDK-Lambda |
| **Manufacturer ..... :** | TDK-LAMBDA UK LTD<br>KINGSLEY AVE<br>ILFRACOMBE<br>EX34 8ES UNITED KINGDOM |
| **Model/Type reference ..... :** | DRB480-24-1-xyz<br>DRB480-48-1-xyz<br>where x, y, z may be any letter or digit or blank, considered non safety relevant information, see model differences |
| **Ratings ..... :** | INPUT:<br>100-240VAC, 5.4A, 50/60Hz<br><br>OUTPUT:<br>DRB480-24-1-xyz:<br>24-26.4Vdc, 20-18.2A (max 480W)<br>DRB480-48-1-xyz:<br>48-52.8 Vdc, 10-9.09A (max 480W) |

**Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):**

| | | | |
|---|---|---|---|
| ☒ | **CB Testing Laboratory:** | | |
| **Testing location/ address.....:** | | UL VS Limited, Unit 1-3 Horizon, Wade Road, Kingsland Business Park, Basingstoke RG24 8AH, United Kingdom | |
| **Tested by (name, function, signature).....:** | | Mark John De Sagun / Project Handler |  |
| **Approved by (name, function, signature)...:** | | Dennis Butcher / Reviewer |  |
| ☐ | **Testing procedure: CTF Stage 1:** | | |
| **Testing location/ address.....:** | | | |
| **Tested by (name, function, signature).....:** | | | |
| **Approved by (name, function, signature)...:** | | | |
| ☐ | **Testing procedure: CTF Stage 2:** | | |
| **Testing location/ address.....:** | | | |
| **Tested by (name + signature) .....:** | | | |

| | | |
|---|---|---|
| **Witnessed by (name, function, signature) .:** | | |
| **Approved by (name, function, signature)...:** | | |
| | | |
| ☐ **Testing procedure: CTF Stage 3:** | | |
| ☐ **Testing procedure: CTF Stage 4:** | | |
| **Testing location/ address.....:** | | |
| **Tested by (name, function, signature).....:** | | |
| **Witnessed by (name, function, signature) .:** | | |
| **Approved by (name, function, signature)...:** | | |
| **Supervised by (name, function, signature) :** | | |
| | | |

**List of Attachments (including a total number of pages in each attachment):**

National Differences (18 pages)
Enclosures (13 pages)

**Summary of testing:**

| **Tests performed (name of test and test clause):** | **Testing Location:** **CBTL: UL VS Limited, Unit 1-3 Horizon, Wade Road, Kingsland Business Park, Basingstoke RG24 8AH, United Kingdom** |
|---|---|
| Capacitance Discharge (2.1.1.7) | Testing waived ( conducted under report E135494-A6043) |

**Summary of compliance with National Differences:**

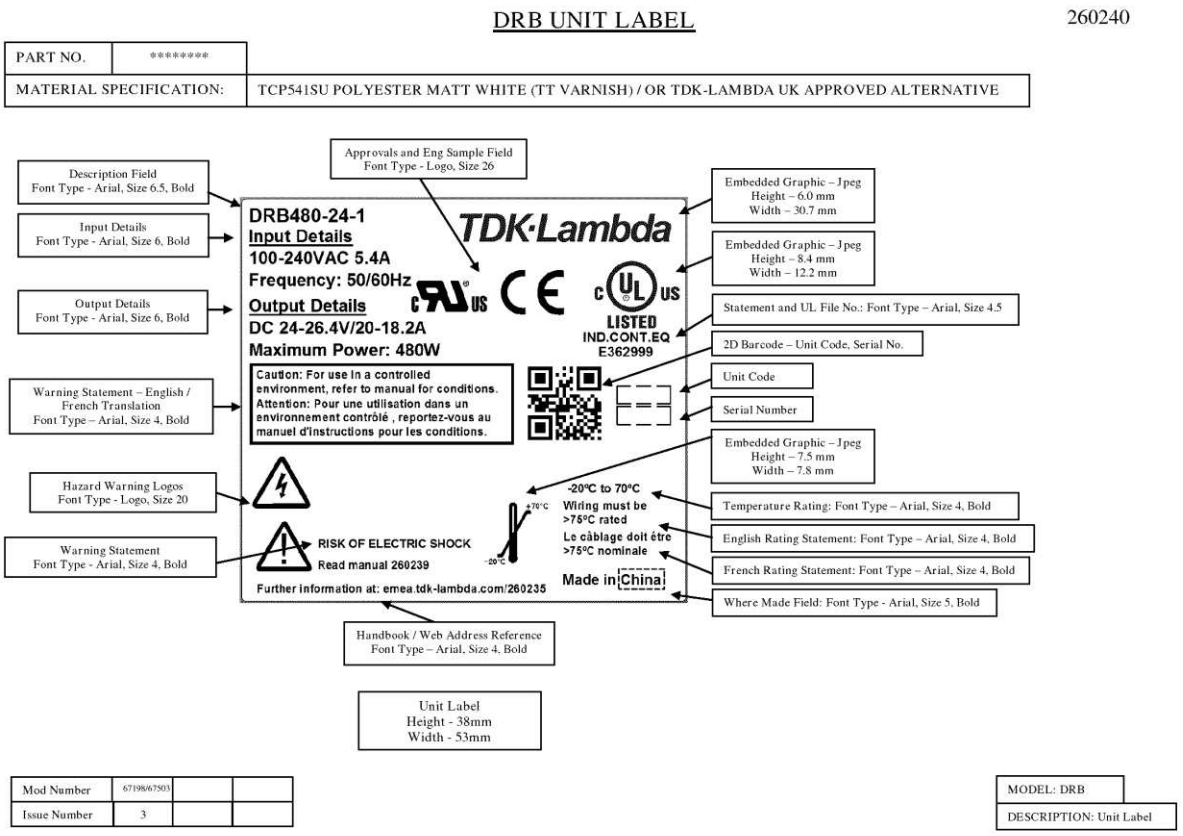
**List of countries addressed:** Argentina, Australia / New Zealand, China, EU Group and National Differences, Israel, Japan, Korea, Singapore, USA, Canada

EU Group and National Differences applies to CENELEC member countries: Austria , Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom

☒ **The product fulfils the requirements of:** EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013, CSA CAN/CSA-C22.2 No. 60950-1 2nd Edition, Revised October 14, 2014

**Copy of marking plate:**

**The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.**




Note: The above markings are the minimum requirements required by the safety lab. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.

| **Test item particulars..... :** | |
|---|---|
| Equipment mobility | for building-in |
| Connection to the mains | N/A (component for building-in) |
| Operating condition | continuous |
| Access location | N/A (component for building-in) |
| Over voltage category (OVC) | OVC II |
| Mains supply tolerance (%) or absolute mains supply values | +10%, -10% |
| Tested for IT power systems | Yes |
| IT testing, phase-phase voltage (V) | 400 |
| Class of equipment | Class I (earthed) |
| Considered current rating of protective device as part of the building installation (A) | 20A |
| Pollution degree (PD) | PD 2 |
| IP protection class | IP X0 |
| Altitude of operation (m) | 3000 (See Technical Considerations) |
| Altitude of test laboratory (m) | less than 2000 meters |
| Mass of equipment (kg) | 1.18 |

| **Possible test case verdicts:** | |
|---|---|
| **- test case does not apply to the test object .....:** | N/A |
| **- test object does meet the requirement .....:** | P (Pass) |
| **- test object does not meet the requirement .....:** | F (Fail) |
| **Testing .....:** | |
| **Date of receipt of test item.....:** | N/A |
| **Date (s) of performance of tests .....:** | N/A |

**General remarks:**

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

**Throughout this report a ☐ comma / ☒ point is used as the decimal separator.**

| **Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:** | |
|---|---|
| The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... : | ☐ **Yes**<br>☒ **Not applicable** |

**When differences exist; they shall be identified in the General product information section.**

| | |
|---|---|
| **Name and address of factory (ies) .....:** | PANYU TRIO MICROTRONICS CO LTD<br>SHIJI INDUSTRIAL ESTATE<br>DONGYONG<br>NANSHA<br>GUANGZHOU<br>GUANGDONG 511453 CHINA |

**General product information:**

**Report Summary**

The original report was modified on 2020-07-21 to include the following changes/additions:

Technical Amendment:

1. Revised CCL table. Additional discharge resistors (R13, R14) added in the list and few component updates/corrections.

2. additional clause added in the list. National differences TRF's and associated countries have been updated.

Based on conducted testing (capacitance discharge) on E135494-A6043 and the review of product technical documentation, it has been determined that the product continues to comply with the standard.

This report should be read in conjunction with CBTR Ref. No: E135494-A109-CB-1-Original, -correction-1, -Amd.-1, and -Amd.-2, CBTC Ref. no: DK-57566-A2-UL issued on 2018-11-28.

**Product Description**

Device is AC/DC switch mode power supply for building-in on DIN rail.

**Model Differences**

suffix '-xyz' is optional and denotes customer-specific variant (like fixed voltage or no LED), and is deemed not safety relevant.
Model DRB480-48-1 is mechanically and electrically identical to model DRB480-24-1, except for:
-different output ratings
-different transformer TX1, output choke L5
-different FET on ASSY1
-passive elements in SELV circuit to accomodate different output ratings
-changed PWB layouts -- the safety relevant part (spacings, PE path) remain unchanged,
Primary side of all models is strictly identical.

**Additional application considerations – (Considerations used to test a component or sub-assembly) –**

DERATING INFORMATION:

Max. Output power: 480W up to 50°C, derate linearly down to 300W at 70°C. See manual.

**Technical Considerations**

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 50°C, 70°C with derating
- The means of connection to the mains supply is : to be determined in End Product
- The product is intended for use on the following power systems : TT, TN, IT
- The equipment disconnect device is considered to be : determined in End Product
- The product was investigated to the following additional standards : EN 60950-1:2006 + A11:2009 +

A1:2010 + A12:2011 + A2:2013 (which includes all European national differences, including those specified in this test report).

- The following accessible locations (with circuit/schematic designation) are within a limited current circuit : Output
- The following were investigated as part of the protective earthing/bonding : Printed wiring board trace (refer to Enclosure - Schematics + PWB for layouts)
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- LEDs provided in the product are considered low power devices : Yes
- The following scope limitations apply to this test report and additional evaluation and/or tests may be required when submitting this CB Report to a National Certification Body (NCB) to obtain a national mark:
- - no EMC tests nor evaluation to EMC Directive 2004/108/EC and 2014/30/EU
- - no evaluation to RoHS Directive 2002/95/EC
- - no evaluation to Council Recommendation 1999/519/EC nor 2006/25/EC
- - only English version of markings and instructions provided and reviewed
- The Clearances and Creepage Distances have additionally been assessed for suitability up to 3 000 m elevation.

**Engineering Conditions of Acceptability**

When installed in an end-product, consideration must be given to the following:

- The following Production-Line tests are conducted for this product : Earthing Continuity, Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary-Earthed Dead Metal: 316 Vrms, 584 Vpk, Primary-SELV: 233 Vrms, 423 Vpk
- The following secondary output circuits are SELV : output
- The following output terminals were referenced to earth during performance testing : Output negative.
- The power supply terminals and/or connectors are : Suitable for field wiring
- The maximum investigated branch circuit rating is : 20A
- The investigated Pollution Degree is : 2
- Proper bonding to the end-product main protective earthing termination is : Required
- An investigation of the protective bonding terminals has : Been conducted
- The following input terminals/connectors must be connected to the end-product supply neutral : J7-2
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105°C) : Transformer T1 (class 155°C), Coil L4 (class 155°C), Coli L1 (class 155°C)
- The following end-product enclosures are required : Mechanical, Fire, Electrical
- The following components require special consideration during end-product Thermal (Heating) tests due to the indicated maximum temperature measurements during component-level testing : metal housing (85.8°C) - additional requirements for accessibillity to be evaluated in end product.

**Abbreviations used in the report:**

| | | | |
|---|---|---|---|
| - normal conditions | **N.C.** | - single fault conditions | **S.F.C** |
| - functional insulation | **OP** | - basic insulation | **BI** |
| - double insulation | **DI** | - supplementary insulation | **SI** |
| - between parts of opposite polarity | **BOP** | - reinforced insulation | **RI** |

**Indicate used abbreviations (if any)**