**Test Report issued under the responsibility of:**

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

| | |
|---|---|
| **Report Reference No** ..... : | E220248-A42-CB-1 |
| Date of issue ..... : | 2018-11-28 |
| Total number of pages ..... : | 8 |
| **CB Testing Laboratory** ..... : | UL RTP |
| Address ..... : | 12 Laboratory Drive, Research Triangle Park , NC, 27709, USA |
| **Applicant's name** ..... : | TDK-LAMBDA AMERICAS INC |
| Address ..... : | SUITE 100<br>3320 MATRIX DR<br>RICHARDSON TX 75082<br>UNITED STATES |
| **Test specification:** | |
| Standard ..... : | IEC 60950-1:2005 (Second Edition); Am1:2009 + Am2:2013 |
| Test procedure ..... : | CB Scheme |
| Non-standard test method ..... : | N/A |
| **Test Report Form No.** ..... : | IEC60950_1F |
| Test Report Form originator ..... : | SGS Fimko Ltd |
| Master TRF ..... : | Dated 2014-02 |



**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** ..... : | DC-DC Converter |
| Trade Mark ..... : | TDK, TDK-Lambda |
| Manufacturer ..... : | TDK-LAMBDA AMERICAS INC<br>SUITE 100<br>3320 MATRIX DR<br>RICHARDSON TX 75082<br>UNITED STATES |
| Model/Type reference ..... : | i7Czz***A%%%V-xxx-R<br><br>where zz represents input voltage where it may be 2W (9-36 VDC input), or 4W (9-53 VDC input), 30A max input current.<br>*** represents rated output current between 0A - 30A, where *** may be 1 to 3 digits.<br>%%% represents rated output voltage between 0.8Vdc - 56Vdc, where %%% may be 1 to 3 digits.<br>xxx indicates a number or alphanumeric character which affects non safety related features.<br>-R is optional and indicates RoHS compliance. |
| Ratings ..... : | Not required.<br><br>Input: 9-53Vdc, 30A Max<br>Output: 0.8 VDC to 56VDC;<br>Max 30A, 439 W maximum. |

| **Testing procedure and testing location:** | | |
|---|---|---|
| [ ] | **CB Testing Laboratory** | |
| | Testing location / address .....: | |
| [ ] | **Associated CB Test Laboratory** | |
| | Testing location / address .....: | |
| | Tested by (name + signature) .....: | |
| | Approved by (name + signature)....: | |
| [ ] | **Testing Procedure: TMP/CTF Stage 1** | |
| | Testing location / address .....: | |
| | Tested by (name + signature) .....: | |
| | Approved by (name + signature)....: | |
| [x] | **Testing Procedure: WMT/CTF Stage 2** | |
| | Testing location / address .....: | TDK-LAMBDA AMERICAS INC, SUITE 100, 3320 MATRIX DR, RICHARDSON TX 75082, UNITED STATES |
| | Tested by (name + signature) .....: | Steven F. McKitrick - Tester See Original Report for Signatures |
| | Witnessed by (name + signature) ..: | Mengis Tesfay - Project Handler See Original Report for Signatures |
| | Approved by (name + signature)....: | Scott Shepler |
| [ ] | **Testing Procedure: SMT/CTF Stage 3 or 4** | |
| | Testing location / address .....: | |
| | Tested by (name + signature) .....: | |
| | Witnessed by (name + signature) ..: | |
| | Approved by (name + signature)....: | |
| | Supervised by (name + signature) .: | |

**List of Attachments**

National Differences (0 pages)

Enclosures (0 pages)

**Summary of Testing:**

No tests were conducted

**Summary of Compliance with National Differences:**

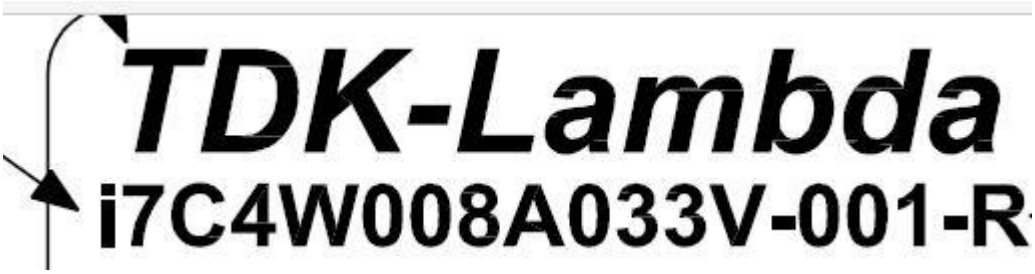
Countries outside the CB Scheme membership may also accept this report.

List of countries addressed: AR, AT, AU, BE, BG, BY, CA, CH, CN, CS, CZ, DE, DK, ES, EU, FI, FR, GB, GR, HU, IE, IL, IN, IT, JP, KR, MY, NL, NO, NZ, PL, PT, RO, SA, SE, SG, SI, SK, UA, US, ZA

The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013

**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.



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|---|---|
| **Test item particulars :** | |
| Equipment mobility ..... : | for building-in |
| Connection to the mains ..... : | not directly connected to the mains |
| Operating condition ..... : | continuous |
| Access location ..... : | operator accessible |
| Over voltage category (OVC) ..... : | OVC I |
| Mains supply tolerance (%) or absolute mains supply values ..... : | No direct connection |
| Tested for IT power systems ..... : | No |
| IT testing, phase-phase voltage (V) ..... : | N/A |
| Class of equipment ..... : | Not classified |
| Considered current rating of protective device as part of the building installation (A) ..... : | N/A |
| Pollution degree (PD) ..... : | PD 2 |
| IP protection class ..... : | IP X0 |
| Altitude of operation (m) ..... : | less than 2000 meters |
| Altitude of test laboratory (m) ..... : | less than 2000 meters |
| Mass of equipment (kg) ..... : | Max. 0.088 kg |
| **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(s) 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.<br>"(see appended table)" refers to a table appended to the report.<br><br>Throughout this report a point is used as the decimal separator. | |
| **Manufacturer's Declaration per Sub Clause 4.2.5 of IECEE 02:** | Yes |
| The application for obtaining a CB Test Certificate includes more than one factory 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 .....<br><br>When differences exist, they shall be identified in the General Product Information section. | |
| **Name and address of Factory(ies):** | TDK-LAMBDA MALAYSIA SDN BHD<br>PLO33 KAWASAN PERINDUSTRIAN SENAI<br>81400 SENAI<br>JOHOR MALAYSIA<br><br>TDK-LAMBDA AMERICAS INC |

SUITE 100
3320 MATRIX DR
RICHARDSON TX 75082
UNITED STATES

**GENERAL PRODUCT INFORMATION:**

**Report Summary**

The original report was modified on 2019-06-11 to include the following changes/additions:
Correction 3: A correction was issued to update the Testing Location information of the previous correction report (Correction 2), due to typographical error.

**Product Description**

The i7C product family consists of non-isolated DC-DC power modules intended to be used as a component in an end-user's power system. The modules will be offered in multiple input voltage and output voltage ranges. The input ranges from 9 - 53Vdc input at 30 A max. The output voltage will be adjustable between 0.8V to 56V. The rated output power will be 439W or less

**Model Differences**

All models within the series are similar except for input rating, output rating, and size of inductor.

**Additional Information**

Correction 2 - Corrected input rating from 5 - 56 Vdc input to 9 - 53 VDC in Product Description section of GPI, due to typographical error. Also corrected max power under Models and Rating to 439 Watts to match test data, due to typographical error. No testing deemed necessary.

Correction 1 to Report E220248-A42 was issued to add more description to the naming convention regarding *** and %%%. Additionally, maximum wattage was added to the ratings for improved clarification. No other changes were made to the report.

Models i7C4W008A120V-xxx(-R), i7C2W020A120V-xxx(-R) of i7C series were used for test purposes and are considered representative of the entire series. Model i7C4W008A120V-xxx is the highest output voltage and highest power module within the series.

Marking label provided represents all models in series.

**Technical Considerations**

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 25°C
- 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 are available from the Applicant upon request: Installation (Safety) Instructions / Manual

**Engineering Conditions of Acceptability**

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

- The following secondary output circuits are SELV: All
- The following secondary output circuits are at hazardous energy levels: All
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- The investigated Pollution Degree is: 2
- Proper bonding to the end-product main protective earthing termination is: Not required
- The following end-product enclosures are required: 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: PWB. Rated 130 C.
- Power to the DC-DC Converter is intended to be supplied by isolated secondary circuitry in an end-use application. --
- All Units were tested with an external 30A fuse during Abnormal Operation and Component Fault testing. --
- The following components require special consideration during end-product Thermal (Heating) tests due to the indicated maximum temperature measurements during component-level testing: The PWB is rated 130°C. --
- Output voltage may be adjusted for up the maximum fixed output power (i.e. maximum output current is decreased). When the output voltage is adjusted down, the maximum output current is fixed (i.e. available output power is decreased). --

Abbreviations used in the report:

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

Indicate used abbreviations (if any)