

## UL TEST REPORT AND PROCEDURE

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Standard:</b>                   | UL 60950-1, 2nd Edition, 2007-03-27 (Information Technology Equipment - Safety - Part 1: General Requirements)<br>CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2007-03 (Information Technology Equipment - Safety - Part 1: General Requirements)                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Certification Type:</b>         | Component Recognition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>CCN:</b>                        | QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Product:</b>                    | Switching Power Supply                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Model:</b>                      | ZWS75BAF-abcd<br>a = 3, 5, 12, 15, 24, 48. b = "/" or blank. c = A, L or blank. d = CO2, FG, FV or blank.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Rating:</b>                     | Input: 100-240 Vac, 50/60 Hz<br>0.7 A (for Model ZWS75BAF-3)<br>1.0 A (except for Models ZWS75BAF-5, ZWS75BAF-12, ZWS75BAF-15, ZWS75BAF-24, and ZWS75BAF-48)<br><br>Output:<br>3.3 Vdc, 15 A (Model ZWS75BAF-3)<br>(2.64 - 3.63 Vdc, maximum 15 A, maximum 49.5 W)<br>5 Vdc, 15 A (Model ZWS75BAF-5)<br>(4.0 - 5.5 Vdc, maximum 15 A, maximum 75.0 W)<br>12 Vdc, 6.3 A (Model ZWS75BAF-12)<br>(9.6 - 13.2 Vdc, maximum 6.3 A, maximum 75.6 W)<br>15 Vdc, 5.0 A (Model ZWS75BAF-15)<br>(12.0 - 16.5 Vdc, maximum 5.0 A, maximum 75.0 W)<br>24 Vdc, 3.2 A (Model ZWS75BAF-24)<br>(19.2 - 26.4 Vdc, maximum 3.2 A, maximum 76.8 W)<br>48 Vdc, 1.6 A (Model ZWS75BAF-48)<br>(38.4 - 52.8 Vdc, maximum 1.6 A, maximum 76.8 W) |
| <b>Applicant Name and Address:</b> | TDK-LAMBDA CORP<br>NAGAOKA TECHNICAL CENTER<br>R&D DIV<br>2704-1 SETTAYA-MACHI<br>NAGAOKA-SHI<br>NIIGATA 940-1195 JAPAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

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**Supporting Documentation**

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
  - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
  - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
  - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

### Product Description

The product is a switching power supply intended for building in to an end product.

### Model Differences

All models are identical except for input rating of Model ZWS75BAF-3, model designation, output ratings, and suffixes.

ZWS75BAF-abcd

a = 3, 5, 12, 15, 24, 48. b = "/" or blank. c = A, L or blank. d = CO2, FG, FV or blank.

/A: Addition of L shaped metal chassis mounted solder side of unit and cover.

/CO2: Coating on both sides of Printed Wiring Board (not relied upon to reduce spacings)

/FG: Low Leakage option

/FV: Fixed output voltage without adjustment

/L: Addition of L shaped metal chassis mounted solder side of unit.

### Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : N/A
- Operating condition : continuous
- Access location : for building-in
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10%
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : N/A
- Considered current rating (A) : 20 A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : up to 2000 m
- Altitude of test laboratory (m) : less than 1000 m
- Mass of equipment (kg) : 0.23 kg (except for suffix /A and /L), approximately 0.3kg (for suffix /A), , approximately 0.27kg (for suffix /L)
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: Maximum 70°C. See Enclosure Id. 7-01, 7-02 and 7-03 for details.
- The product is intended for use on the following power systems: TN

### Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following Production-Line tests are conducted for this product: Electric Strength

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- The end-product Electric Strength Test is to be based upon a maximum working voltage of: 357 Vrms and 808 Vpk
- The following secondary output circuits are SELV: 3.3 Vdc Output, 5 Vdc Output, 12 Vdc Output, 15 Vdc Output, 24 Vdc Output, and 48 Vdc Output
- The following secondary output circuits are at non-hazardous energy levels: 3.3 Vdc Output, 5 Vdc Output, 12 Vdc Output, 15 Vdc Output, 24 Vdc Output, and 48 Vdc Output
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- The maximum investigated branch circuit rating is: 20 A
- The investigated Pollution Degree is: 2
- Proper bonding to the end-product main protective earthing termination is: Required
- The following input terminals/connectors must be connected to the end-product supply neutral: Input Connector (CN1) (N) pin.
- 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 F), Inductor (L1) (120°C), Inductor (L4) (120°C), and Inductor (L5) (120°C)
- The following end-product enclosures are required: Electrical and Fire