

## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	UL 60950-1, 2nd Edition, 2011-12-19 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2011-12 (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>	ZWS30B-abcd a = 3, 5, 12, 15, 24 or 36 b = "/" or blank c = A, L or blank d = CO2, FG, FV or blank
<b>Rating:</b>	I/P: 100-240Vac, 50-60Hz, 0.5A for ZWS30B-3bcd; 0.65A for : ZWS30B-5bcd, ZWS30B-12bcd, ZWS30B-15bcd, ZWS30B- 24bcd; 1.0A for ZWS30B-36bcd;  Output: ZWS30B-3bcd: 2.97~3.63Vdc, Max. 6A, Max.19.8W; ZWS30B-5bcd: 4.5~5.5Vdc, Max. 6A, Max.30.0W; ZWS30B-12bcd: 10.8~13.2Vdc, Max. 2.5A; Max.30.0W; ZWS30B-15bcd: 13.5~16.5Vdc, Max. 2.0A; Max.30.0W; ZWS30B-24bcd: 21.6~26.4Vdc, Max. 1.3A; Max. 31.2W; ZWS30B-36bcd: 32.4~39.6Vdc, Max. 0.9A; Max. 32.4W.
<b>Applicant Name and Address:</b>	TDK-LAMBDA CORP NAGAOKA TECHNICAL CENTER R&D DIV 2704-1 SETTAYA-MACHI NAGAOKA-SHI NIIGATA 940-1195 JAPAN

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Report Reference #

E122103-A122-UL

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.

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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

Switching mode power supply, for building-in equipment, all electrical components are mounted on V-1 PWB and enclosed by metal enclosure.

### Model Differences

All models are identical to each other except for secondary circuit, secondary winding of transformer, output rating and designation.

Nomenclature: ZWS30B-abcd

(a = 3, 5, 12, 15, 24, 36. b = "/" or blank. c = A, L or blank. d = CO2, FG, FV or blank)

a: output voltage

b: (separator)

c: A = with chassis and cover

L = with chassis

d: CO2 = coating of both sides of PWB for functional purpose

FG = low leakage current

FV = fixed output voltage without adjustable volume (VR51)

### Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : pluggable A
- Operating condition : continuous
- Access location : N/A
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10% (declared by

manufacturer)

- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- 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) : Less than 3000m
- Altitude of test laboratory (m) : Less than 2000m
- Mass of equipment (kg) : 0.13kg for c=blank, 0.25kg for c=L, 0.3kg for c=A
- The product was submitted and evaluated for use at the maximum ambient temperature (T<sub>ma</sub>) permitted by the manufacturer's specification of: Max.50Deg.C for 100% load; Max.60Deg.C for 70% load; Max.70Deg.C for 20% load.
- 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: TN
- The equipment disconnect device is considered to be: To be determined in end product.
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual
- LIMITED SHORT-CIRCUIT TEST for PWB protective trace should be considered in the end product.

#### **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
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-Earthed Dead Metal: 271 Vrms, 484Vpk;, Primary-SELV: 271Vrms, 488 Vpk. ,
- The following secondary output circuits are SELV: secondary outputs.
- The following secondary output circuits are at non-hazardous energy levels: secondary outputs.
- The power supply terminals and/or connectors are: Not investigated for field wiring
- 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
- An investigation of the protective bonding terminals has: Not been conducted.
- 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): T1 (Class B).
- The following end-product enclosures are required: Fire, Electrical
- The equipment is suitable for direct connection to: AC mains supply