UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Component Recognition
CCN:	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Complementary CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Product:	Switching Power Supply
Model:	ZWD225PAF-0524x (where x = blank, /J, /L, /T, /A, /FG, /CO, /FGCO, /LCO,/LFG, /LFGCO, /ACO, /AFG, /AFGCO, /JCO, /JFG, /JFGCO, /JL, /JLCO, /JLFG, /JLFGCO, /JA, /JACO, /JAFG, /JAFGCO, /TCO,/TFG,/TFGCO, /TL, /TLCO, /TLFG, /TLFGCO, /TA,/TACO,/TAFG,/TAFGCO,/TARF) Note: The variable in above has a definition as describe in below: a) Connector type, - "Blank" with Molex connector - "J" with JST connector - "T" with Terminal Block b) Different metal chassis, - "L" with L-shape metal plate type - "A" with L-shape metal plate and cover c) "FG" with low leakage current (not affecting safety) d) "CO" with coating (not affecting safety) e) "TARF" with Terminal Block, coating, and fixed components by RTV and tube (not affecting safety)
Rating:	ZWD225PAF-0524x: I/P: 100-240 V ac, 3.0 A, 50/60 Hz O/P: 5 V dc, 5 A; 24 V dc, 9.0 A
Applicant Name and Address:	TDK-LAMBDA CORP NAGAOKA TECHNICAL CENTER R&D DIV 2704-1 SETTAYA-MACHI NAGAOKA-SHI NIIGATA 940-1195 JAPAN

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.

Prepared by: Tetsuo Iwasaki Reviewed by: Ikuro Kinno

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

PWB with electronics components.

Model Differences

N/A

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%
- 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) : up to 2000
- Altitude of test laboratory (m) : less than 2000 meters
- Mass of equipment (kg) : 1.08
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer’s specification of: - The ambient temperature is specified for air forced cooling at 60°C. - The ambient temperature is specified for convection cooling at 50°C.
- The means of connection to the mains supply is: Pluggable A
- 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 end-product Electric Strength Test is to be based upon a maximum working voltage of: T1: Primary-SELV: 231 Vrms, 620 Vpk;, T2: Primary-SELV: 285 Vrms, 456 Vpk.
- The following secondary output circuits are SELV: +5 V dc and +24 V dc outputs
- The following secondary output circuits are at hazardous energy levels: +24 V dc output
- The following secondary output circuits are at non-hazardous energy levels: +5 V dc output
- The following output terminals were referenced to earth during performance testing: CN2, pin4
- 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 (via Chassis on which the unit is mounted)
- An investigation of the protective bonding terminals has: Been conducted
- The following input terminals/connectors must be connected to the end-product supply neutral: CN1, pin 4 (For MOLEX, model 41791 series); CN1, pin 3 (For JST, model VH series); CN1, pin 2 (For EMUDEN, model T69XX-A-X)
- The following end-product enclosures are required: Fire, Electrical
- The maximum continuous power supply output (Watts) relied on forced air cooling from: Fan at 0.7 m/S in flow applied to primary side, see Enclosure Miscellaneous 7-01 for details.
- The equipment had been tested with an external DC cooling fan providing an airflow of 0.7 m/s.
- The following output circuits are at ES1 energy levels : +5 V dc and +24 V dc
- The following output circuits are at PS3 energy levels : +5 V dc and +24 V dc
- The following magnetic devices (e.g. transformers or inductor) are provided with IEC 60085 (equivalent to UL 1446) insulation system with the indicated rating greater than Class 105 (A): T1 (Class 130(B)), T2 (Class 155(F))
- Humidity conditioning has been conducted by tropical condition
- Classification of PIS has not been conducted. Therefore, all electrical components and conductors including printed wirings were assumed to be arcing/resistive PIS.
- This component has been evaluated in "control of fire spread" method assuming appropriate fire enclosure is provided in end product. Unless the fire enclosure is made of non-combustible or V-0 material, the separation from the PIS shall be considered.
- Line to Line Capacitors (C1, C4) may have variation in capacitance up to 0.68 uF and (C5) may have variation in capacitance up to 0.1 uF. Therefore, consideration shall be given in controlling the capacitance value in the end-product application with respect to capacitance discharge issue.
- Primary to Ground Capacitor (C2, C3, C7) may have variations in capacitance up to 2200 pF and (C20) may have variation in capacitance up to 4700 pF. Therefore, consideration shall be given in controlling the capacitance values in end product application with respect to touch Current issue.

Additional Information

Revision: SR4143554.1019608

Withdrawal the Models ZWD225PAF-0541x and JP225PAF-0524x of the File E122103-A164, Vol. X1 dur to model transferred.

Additional Standards

The product fulfills the requirements of: The product fulfills the requirements of: UL 62368-1, 2nd Edition, 2014-12-01, CAN/CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12.
Markings and instructions

Clause Title	Marking or Instruction Details
Power rating - Ratings	Ratings (voltage, frequency/dc, current)
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Fuses - Non-operator access/soldered-in fuses	Unambiguous reference to service documentation for instructions for replacement of fuses replaceable only by service personnel
Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.