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:	EPL225PSxx, (where the "xx" can be any number between 12 to 48 indicating main output voltage, may also be provided with suffix "SF".)
Rating:	Input: 100-240 Vac, 50/60Hz, 3A Max. Output: See Model Differences for details.
Applicant Name and Address:	XP POWER L L C 15641 RED HILL AVE, SUITE 100 TUSTIN CA 92780 UNITED STATES

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: Scott Corley / Project Handler Reviewed by: Walid Beytoughan/Reviewer

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 models covered in this report are component AC-DC power supplies intended for use in Information Technology Equipment. They are open frame power supplies intended for building-in.

Model Differences

All models in the Model EPL225PSXX Series are identical with exception to the Mains Transformer (TR1) and minor secondary components that allow for different output voltage ratings.

Output Ratings:
EPL225PS12: V1: 12Vdc, 12.5A Max., 150 W Max. (Convection Cooled) or
: 12Vdc, 18.75A Max., 225 W Max. (Forced Air Cooled)
V2: 12Vdc, 0.5A, (Forced Air Cooled Only)
EPL225PS15: V1: 15Vdc, 10A Max., 150 W Max. (Convection Cooled) or
: 15Vdc, 15A Max., 225 W Max. (Forced Air Cooled)
V2: 12Vdc, 0.5A, (Forced Air Cooled Only)
EPL225PS18: V1: 18Vdc, 8.33A Max., 150 W Max. (Convection Cooled) or
: 18Vdc, 12.5A Max., 225 W Max. (Forced Air Cooled)
V2: 12Vdc, 0.5A, (Forced Air Cooled Only)
EPL225PS24: V1: 24Vdc, 6.25A Max., 150 W Max. (Convection Cooled) or
: 24Vdc, 9.38A Max., 225 W Max. (Forced Air Cooled)
V2: 12Vdc, 0.5A, (Forced Air Cooled Only)
EPL225PS28: V1: 28Vdc, 5.36A Max., 150 W Max. (Convection Cooled) or
: 28Vdc, 8.04A Max., 225 W Max. (Forced Air Cooled)
V2: 12Vdc, 0.5A, (Forced Air Cooled Only)
EPL225PS36: V1: 36Vdc, 4.16A Max., 150 W Max. (Convection Cooled) or
: 36Vdc, 6.25A Max., 225 W Max. (Forced Air Cooled)
V2: 12Vdc, 0.5A, (Forced Air Cooled Only)
EPL225PS48: V1: 48Vdc, 3.1A Max., 150 W Max. (Convection Cooled) or
: 48Vdc, 4.69A Max., 225 W Max. (Forced Air Cooled)
V2: 12Vdc, 0.5A, (Forced Air Cooled Only)

Suffix "SF" indicates single fuse provided in the line side of the primary.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : for building-in

- § 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 : Yes
- § IT testing, phase-phase voltage (V) : 230
- § Class of equipment : Class I
- § Considered current rating of protective device as part of the building installation (A) : 20 A
- § Pollution degree (PD) : PD 2
- § IP protection class : IP X0
- § Altitude of operation (m) : 5000
- § Altitude of test laboratory (m) : less than 2000 meters
- § Mass of equipment (kg) : 0.1
- § The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 50°C at full rated load and 70°C at 50% rated load.
- § The means of connection to the mains supply is: for building-in, to be determined in end-product.
- § The product is intended for use on the following power systems: TN, IT
- § The equipment disconnect device is considered to be: for building-in, to be determined in end-product.
- § The product was investigated to the following additional standards: CSA/UL/IEC 62368-1 2nd Ed, 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).

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, Earthing Continuity
- § The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-SELV: 280 Vrms, 484 Vpk, Primary-Earthed Dead Metal: 240 Vrms, 400 Vpk
- § The following secondary output circuits are at hazardous energy levels: All
- § The power supply terminals and/or connectors are: Not investigated 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: Not been conducted
- § The following input terminals/connectors must be connected to the end-product supply neutral: Input Connector (CN1) N terminal.
- § 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): TR1 (Class F)
- § The following end-product enclosures are required: Fire, Mechanical, Electrical
- § Suitable disconnect device is to be provided in the end system.

- § Temperature, Leakage and Dielectric Strength testing shall be considered in the end system.
- § According to IEC60664-1, Table A2, required Clearances have been adjusted by multiplying the clearance at sea level by a factor of 1.48 for operating at an altitude of 5000 meters. The correction factor is based on barometric pressure of 70kPa and Overvoltage Category II. If the calculated Clearance exceeded the Creepage, the Creepage was adjusted to the value of clearance. No other additional requirements were considered at this time as they are not explicitly addressed in UL 60950-1.
- § Printed Wiring Board rated 130°C.
- § The equipment is provided with a fuse in both the Line and Neutral of the primary circuit. The need for a marking warning service person of the hazards associated with neutral fusing shall be considered in the end-product.
- § Heatsinks are floating and considered live. They should not be accessible in the end-product.
- § Heating test was not conducted on unit with input/output leads. If unit is provided with input and/or output leads, then temperature on leads must be measured and cannot exceed 105°C.
- § UL 62368-1 Capacitance Discharge - Safeguards against capacitor discharge after disconnection of a connector (clause 5.5.2.2) shall be evaluated in the end-product.
- § UL 62368-1 The following output circuits are at PS3 energy levels : All DC Outputs
- § UL 62368-1 The following output circuits are at ES1 energy levels : All DC Outputs
- § UL 62368-1 Prospective Touch Current and Voltage testing to be conducted in the end-product evaluation.

Additional Information

The required clearance values have been assessed for suitability up to 5000 m elevation (1.48 correction factor as per IEC 60664-1, Table A2).

The need for the additional testing and evaluation shall be determined in the end product investigation.

The nameplate markings provided as an Enclosure - Marking Plate are considered representative of the entire series.

The power supply series covered by this report employ Double/Reinforced Insulation between Primary and Secondary circuits.

Correction 1 - No testing was considered necessary due to the addition of Supplementary Information in the Table 4.5.5 that clarifies acceptance of the test data under SMT.

Additional Standards

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

Markings and instructions

Clause Title	Marking or Instruction Details
1.7.1 Power rating - Ratings	Ratings (voltage, frequency/dc, current)
1.7.1 Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number