

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)
Product:	Switching Power Supply
Model:	EMH250PSXXYY-ZZ and EMH350PSXXYY-ZZ, where XX is 12-48, where YY is any two numbers between 0-9 or blank, ZZ is "SF" or blank, may also be provided with additional suffixes "-TF", "-VF", "D" and "-S"; all "-" considered optional. EMH350PS12-01 XB0118
Rating:	For Model EMH250PSXXYY-ZZ Series: Input: 100-240Vac, 50/60, Hz, 3.8A, 250W Output: Refer to Model Differences for details. For Model EMH350PSXXYY-ZZ Series and EMH350PS12-01 XB0118: Input: 100-240Vac, 50/60, Hz, 4.8A, 350W Output: Refer to Model Differences for details.
Applicant Name and Address:	XP POWER LLC SUITE 150 1241 E DYER RD SANTA ANA CA 92705 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.

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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 products evaluated are switching power supplies for building-in to an end-use product information technology products.

Model Differences

Model EMH250PSXXYY-ZZ Series and Model EMH350PSXXYY-ZZ Series are identical with exception that the EMH250PSXXYY-ZZ Series is designed to be rated for a 250 W output power and the EMH350PSXXYY-ZZ Series designed to be rated for a 350 W output power.

All models within the each series are identical with exception to the output rating, mains transformer windings, and minor secondary components.

Models EMH250PSXXYY-ZZ and EMH350PSXXYY-ZZ have the following nomenclature:

XX = 12-48, denotes the rated output voltage.

YY= 0-9, denotes non-safety related functions

ZZ = SF or blank, denotes either single pole fusing (SF) or double fusing (blank)

Units provided with additional suffix "-TF" or "-VF" provided with Top Fan and Cover.

Units provided with additional suffix "-S" indicates models provided with input screw terminals.

Units provided with additional suffix "D" provided with integral O-ring diode located in the secondary

See below for the Output Rating for 50°C Ambient provided with Forced Air Cooling .

Model EMH250PS12YY-ZZ: 10.1 Vdc to 13.5 Vdc, 21 A Max, (250 W Max)

Model EMH250PS15YY-ZZ: 13.6 Vdc to 17 Vdc, 16.7 A Max, (250 W Max)

Model EMH250PS18YY-ZZ: 17.1 Vdc to 21 Vdc, 14 A Max, (250 W Max)

Model EMH250PS24YY-ZZ: 21.1 Vdc to 26 Vdc, 10.5 A Max, (250 W Max)

Model EMH250PS28YY-ZZ: 26.1 Vdc to 31 Vdc, 9.0 A Max, (250 W Max)

Model EMH250PS33YY-ZZ: 31.1 Vdc to 33 Vdc, 7.6 A Max, (250 W Max)

Model EMH250PS36YY-ZZ: 33.1 Vdc to 42 Vdc, 6.9 A Max, (250 W Max)

Model EMH250PS48YY-ZZ: 42.1 Vdc to 54 Vdc, 5.2 A Max, (250 W Max)

Model EMH350PS12YY-ZZ: 10.1 Vdc to 13.5 Vdc, 29.2 A Max, (350 W Max)

Model EMH350PS15YY-ZZ: 13.6 Vdc to 17 Vdc, 23.3 A Max, (350 W Max)

Model EMH350PS18YY-ZZ: 17.1 Vdc to 21 Vdc, 19.5 A Max, (350 W Max)

Model EMH350PS24YY-ZZ: 21.1 Vdc to 26 Vdc, 14.6 A Max, (350 W Max)

Model EMH350PS28YY-ZZ: 26.1 Vdc to 31 Vdc, 12.5 A Max (350 W Max)
Model EMH350PS33YY-ZZ: 31.1 Vdc to 33 Vdc, 10.6 A Max, (350 W Max)
Model EMH350PS36YY-ZZ: 33.1 Vdc to 42 Vdc, 9.8 A Max, (350 W Max)
Model EMH350PS48YY-ZZ: 42.1 Vdc to 54 Vdc, 7.3 A Max (350 W Max)

Stand-by Output for all models: 5Vdc, 2 A or 12Vdc, 0.8 A
Fan Output for all models (V2): 12 Vdc, 0.6 A (Not marked on nameplate)

See Enclosure 7-02 for Output Rating Curve.

Model EMH350PS12-01 XB0118 is identical to Model EMH350PS12 except for model number.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : pluggable 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 : Class I (earthed)
- Considered current rating of protective device as part of the building installation (A) : For Model EMH250PSXXYY Series: 3.8 A/ For Model EMH350PSXYY Series: 4.8 A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : 3048
- Altitude of test laboratory (m) : less than 2000 meters
- Mass of equipment (kg) : 410 g
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 50°C (Output loaded to 100% of rated) de-rated linearly to 70°C (Output loaded to 50% of rated)
- The means of connection to the mains supply is: for building-in, to be determined in the end-product.
- The product is intended for use on the following power systems: TN
- 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).

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 warning or its equivalent to be provided as part of the end product without additional suffix "SF": CAUTION. Double pole/neutral fusing.
- Temperature, Leakage, Earthing, and Dielectric to be considered as part of the end product investigation.
- 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-Earthed Dead Metal: 240 Vrms, 362 Vpk, Primary-SELV: 243 Vrms, 680 Vpk,
- The following secondary output circuits are SELV: All
- The following secondary output circuits are at hazardous energy levels: Main Power 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: Electric Strength
- An investigation of the protective bonding terminals has: Not been conducted
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJ2 insulation system with the indicated rating greater than Class A (105°C): T1-T2, L1, L12, L13, L7, PFC (min. Class F),
- The following end-product enclosures are required: Fire, Electrical
- The maximum continuous power supply output (Watts) relied on forced air cooling from: For Model EMH350PSXXYY Series: 350 W output rating with 12 cfm fan applied Inward from the Input side from 3 in. (7.62 cm) or provided with Top Fan option.,
- Fans: The fan provided in this sub-assembly is not intended for operator access, to be evaluated in the end product.

Additional Information

This report is a reissue of CBTR Ref. No. E139109-A76-CB-2, CB Test Certificate Ref. No. US-21262-UL. Based on the previously conducted testing and the review of product technical documentation including photos, schematics, wiring diagrams and similar, has been determined that the product complies with the standard as specified in the Technical Considerations.

No tests were conducted under this investigation for a standard upgrade to include A2 and to revise Model Differences to show output voltage range for each model. The reissue also covered the following changes:

Table 1.5.1 was also revised as follows:

- Y-Capacitors (C14) to add "Optional" and "Y2".
- Y-Capacitors (C12, C55) to add "Optional" and "Y2".
- Bridging Capacitors (C33, C56) to add "Optional" and "Y2".
- Added - Printed Wiring Board - Conformal Coating - Optional, Dow Corning, type 1-2577.

All required tests were carried out under the original investigation.

The required clearance values have been assessed for suitability up to 3048 m elevation (1.15 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.

Component licenses may be older than 3 years, manufacturer to provide updated licenses upon request.

Additional Standards

The product fulfills the requirements of: CSA C22.2 No. 60950-1-07 + A1:2011, EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011, UL 60950-1 2nd Ed. Revised 2011-12-19, IEC 60950-1:2005 + A1:2009

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
1.7.1 Power rating - Model	Model Number
1.7.6 Fuses - Non-operator access/soldered-in fuses	Unambiguous reference to service documentation for instructions for replacement of fuses replaceable only by service personnel
Special Instructions to UL Representative	
N/A	

Production-Line Testing Requirements

Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
All Models	Transformer, T1 and T2	-	Primary to Secondary	300 0	4242	1

Earthing Continuity Test Exemptions - This test is not required for the following models:

Electric Strength Test Exemptions - This test is not required for the following models:

Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:

Sample and Test Specifics for Follow-Up Tests at UL

Model	Component	Material	Test	Sample(s)	Test Specifics
N/A					