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:	ECE80USXX-ZZ-YYYYYY (where XX represents the output voltage between 12-48, ZZ can be blank or S represents screw terminals or D represents DIN rail mount or SD represents DIN rail mount with screw terminals), Y represents any alphanumeric character, blank or "-".
Rating:	Input: 100-240 Vac, 1.7 A, 50/60 Hz 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: Adam Tangocc / Project Handler Reviewed by: Gregory Ray / 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 model covered in this report is a component power supply intended for use in Information Technology Equipment. It is an open frame power supply intended for building-in.

Model Differences

All models in the Model ECE80USXX Series are identical with exception to the Mains Transformer, T1, and minor secondary components that allow for different output voltage ratings. See below for Model Ratings

Table for 50°C ambient below:
Model ECE80US12: Output Rated: 12 Vdc, 6.67 A max, 80 W max
Model ECE80US15: Output Rated: 15 Vdc, 5.33 A max, 80 W max
Model ECE80US24: Output Rated: 24 Vdc, 3.33 A max, 80 W max
Model ECE80US36: Output Rated: 36 Vdc, 2.22 A max, 80 W max
Model ECE80US48: Output Rated: 48 Vdc, 1.67 A max, 80 W max

Additional Suffix "S" denotes units provided with Screw Terminals.
Additional Suffix "D" denotes units provided with DIN Rail mounting Clip.
Additional Suffix "SD" denotes units provided with DIN Rail mounting Clip with Screw Terminals.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : To be determined in end-use product
- Operating condition : continuous
- Access location : To be determined in end-use product
- 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 : Not classified to be determined in the end product.
- Considered current rating of protective device as part of the building installation (A) : 20 A
- Pollution degree (PD) : PD 2
- IP protection class : IPX0

- Altitude of operation (m) : 5000
- Altitude of test laboratory (m) : 17
- Mass of equipment (kg) : 0.15 kg
- 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 the end product.
- The product is intended for use on the following power systems: IT, TN
- The product was investigated to the following additional standards: IEC 62368-1:2014 and 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).
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: Load side of CY1
- 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.

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-SELV: 270 Vrms, 550 Vpk
- The following secondary output circuits are SELV: All outputs
- The following secondary output circuits are at non-hazardous energy levels: All outputs
- The following secondary output circuits are Limited Current Circuits: Load side of CY1
- The power supply terminals and/or connectors are: Suitable for factory wiring only except for models with suffix -S and -SD which are suitable for field wiring,
- The maximum investigated branch circuit rating is: 20 A
- The investigated Pollution Degree is: 2
- The following input terminals/connectors must be connected to the end-product supply neutral: ACN
- 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, 130°C)
- The following end-product enclosures are required: Fire, Electrical
- Printed Wiring Board rated 130°C.
- The clearance distances have additionally been assessed for suitability up to 5000 m elevation (1.48 correction factor as per IEC 60664-1, Table A2). Consideration shall be given for further evaluation if installed at higher than 5000m.
- Repeat of heating and dielectric test to be considered as part of end product.
- Secondary circuits are isolated from primary circuits by double or reinforced insulation, however the Class of equipment shall be considered in the end product.
- Safeguards against capacitor discharge after disconnection of the input connector (clause 5.5.2.2) shall be evaluated in the end-product.

Additional Information

This report is a Standard upgrade/reissue of CBTR Ref. No.: E317867-A84-CB-1, CB Test Certificate Ref. No.US-23599-UL to IEC 60950-1:2005 (Second Edition), Am1:2009 + Am2:2013. Based on the previously conducted testing and the review of product technical documentation including photos, schematics, wiring diagrams and similar, only the construction review and the review of previous tests was deemed necessary. All required tests were carried out under the original investigation.

Marking label is representative of all models.

Correction:
Deleted Technical Considerations 1.9 regarding LPS Outputs.

Changes associated with this report are considered not to affect compliance with the requirements of the standard. Because of this and previously performed testing, no sample or additional testing was considered necessary. Changes and notes:
-UL Only: Table 1.5.1: The temperature limits of all CY1, CY2, and CY3 capacitors were corrected from 85°C to 125°C.
-UL Only: Table 4.5: The temperature limit for measurements taken at CY2 was corrected from 85°C to 125°C.

Additional Standards

The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013, IEC 60950-1:2005 + A1:2009 + A2:2013, IEC 62368-1:2014

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 - Operator caution statement	"CAUTION: For continued protection against risk of fire, replace only with same type and rating of fuse".

Special Instructions to UL Representative

Inspect the transformer(s) listed in BD1.1 per AA1.1- (C). When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in BD1.1 be conducted at the component manufacturer.

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	T1	-	Primary to Secondary	3000	4242	1

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

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

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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:

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Sample and Test Specifics for Follow-Up Tests at UL

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