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:	Power supply for building-in, switch mode type
Model:	ECS130USxx-yy (where xx can be any number between 12 and 48 designating the output voltage, y can be blank, SF or C). Models with SF designate single fuse option and models with suffix C are provided with a metal cover for Class I use only. ECS130US15-XA1013
Rating:	Input: 100-240 Vac, 50/60 Hz. 3A Output: See Enclosure - Miscellaneous Model output rating for details.
Applicant Name and Address:	XP POWER L L C SUITE 100 15641 RED HILL AVE 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 Tangocci / 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 with or without metal cover intended for building-in Class I or Class II end-products.

Model Differences

All models in the Model ECS130USxx-yy series are identical with exception to the Mains Transformer, T1, and minor secondary components that allow for different output voltage ratings. Models with suffix C is provided with metal cover for Class I use only.

ECS130US15-XA1013 is identical to Model ECS130US15, except for the size of the PWB mounting holes.

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 or Class II (Determined by end product)
- Considered current rating of protective device as part of the building installation (A) : 20
- Pollution degree (PD) : PD 2
- IP protection class : IPX0
- Altitude of operation (m) : Up to 5000
- Altitude of test laboratory (m) : less than 2000 meters
- Mass of equipment (kg) : 0.36 with cover, 0.18 without cover
- 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)., CSA/UL/IEC 62368-1 2nd Ed

- Power supplies covered by this report were evaluated for both Class I and Class II (double insulated). Models with suffix C are provided with metal cover and are for Class I use only. See Conditions of Acceptability.
- The unit has two cooling condition: 1) External Forced Air Cooling: 10CFM air flow, 1 inch distance from Fan to input side of the unit with inward air-flow direction; 2) Convection cooling with and without metal cover.
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 50°C for 100% load (130W) with forced air cooling, derated to 50% load (65W) with forced air cooling at 70°C (applicable to all models); 50°C for 77% load (100W) with convection cooling, derated to 39% (50W) with convection cooling at 70°C (applicable to models without cover); 50°C for 58% load(75W) with convection cooling, derated to 29% (38W) with convection cooling at 70°C (applicable to models with cover). See Enclosure "Miscellaneous" for additional details.
- The product is intended for use on the following power systems: IT, TN
- The means of connection to the mains supply is: for building-in, to be determined in end product.
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: Load side of C9 (Pri to Sec bridging capacitor)
- The equipment disconnect device is considered to be: for building-in, to be determined in 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:

- Printed Wiring Board rated 130°C.
- The equipment is provided with a fuse in both the Line and Neutral of the primary circuit. Cautionary markings for service persons to be considered in the end-product.
- Heatsinks are floating and considered live. They should not be accessible in the end-product.
- Consideration to repeating the Touch Current test should be given in the end-product evaluation.
- Clearance spacing evaluated for 5000 m altitude. Additional consideration maybe necessary in the end-use product.
- The following Production-Line tests are conducted for this product: Earthing Continuity, Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-Earthed Dead Metal: 245 Vrms, 356 Vpk Primary-SELV: 286 Vrms, 603 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 C9 (Pri to Sec bridging capacitor)
- The following output terminals were referenced to earth during performance testing: 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: required when the power supply is used in a Class I end product. Models with suffix C are provided with metal cover and are for Class I use only. The power supply will be considered Class II only when protection against electric shock does not rely on Basic Insulation and provided with sufficient spacings between

primary part of power supply to secondary or accessible parts on the end product. Class II units have no reliance upon protective earthing.,

- An investigation of the protective bonding terminals has: Not been conducted. The acceptability of the protective bonding means shall be determined in the end product.,
- The following input terminals/connectors must be connected to the end-product supply neutral: ACN J1
- 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 F, 155°C) ,
- The following end-product enclosures are required: Electrical, Mechanical, Fire,
- The maximum continuous power supply output (Watts) relied on forced air cooling from: External fan at 10 cfm applied to power supply input side with inward air-flow direction from 1 inch distance between fan and the unit.,
- The equipment is suitable for direct connection to: AC mains supply
- 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.

Additional Information

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.

Required values for clearance are adjusted for 5000 m (1.48 correction factor as per IEC 60664-1, Table A2).

This is a technical amendment. Based on a review of product technical documentation such as photos, schematics, and wiring diagrams, 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:

-Critical Components Table: IC (Q1) (PRI) - Alternate: Technical Data changed to "Rated min. 600 V, max. 800 V, min. 12A."

Additional Standards

The product fulfills the requirements of: CSA C22.2 No. 60950-1-07 + A1:2011 + A2:2014, EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013, IEC 60950-1:2005 + A1:2009 + A2:2013, UL 60950-1 2nd Ed. Revised 2014-10-14

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
1.7.7.2 Terminals for external primary power supply conductors	Capital letter "N" located adjacent to a terminal intended exclusively for connection of the primary power neutral conductor

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	Transformer T1	-	Primary to Secondary	3000	4242	1

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

All model

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					