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:	N12-MMMM-PPFNN (Where M can be blank or a letter A-Z, indicating module designation; where P can be any number 0-9 or blank; where F can be A or C; where N can be any number 0-9 or blank; "-" provided optionally)
Rating:	Input: 100-240 Vac, 50/60Hz, 10 A Output: See Model Differences
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: Randy Johnson Reviewed by: Gregory Ray

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 modular component switching power supply intended for building-in to Information Technology Equipment.

The power supply consists of an input power platform and various plug-in output modules. Each plug-in output module is one slot width. Each power platform supports four slots per platform.

Outputs can be connected in series or in parallel.

Model Differences

All models are provided with a power platform and various combinations of output modules.

Power Platform Chassis:
N12: Max 1200 W (100-240 Vac): up to four output modules provided.

Output Module Ratings:
Modules A-E: 3.3 to 5.5 Vdc, 40 A max, 200 W max.
Modules F-J : 8 to 15 Vdc, 20.8 A max, 250 W max.
Modules K-O: 18 to 30 Vdc, 12.5 A max, 300 W max.
Modules P-T: 33 to 60 Vdc, 6.25 A max, 300 W max.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : permanent connection or 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 : 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 : IPX0
- Altitude of operation (m) : 3048
- Altitude of test laboratory (m) : up to 2000
- Mass of equipment (kg) : 1.45
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 50°C at 100% load, increasing linearly to 70°C at 50% load (see Enclosure 7-12)
- The means of connection to the mains supply is: permanent connection or pluggable A
- The product is intended for use on the following power systems: IT,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).
- The following were investigated as part of the protective earthing/bonding: Printed wiring board trace (refer to Enclosure - Schematics + PWB for layouts)
- According to IEC60664-1, Table A2, required Clearances have been adjusted by multiplying the clearance at sea level by a factor of 1.15 for operating at an altitude of 3048 meters.

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-Earthed Dead Metal: 232 Vrms, 340 Vpk, Primary-SELV: 127 Vrms, 284 Vpk
- The following secondary output circuits are SELV: The outputs of Modules A-Q are considered SELV. The outputs of Modules R-T are considered Hazardous Voltage Secondary. The end-product evaluation shall additionally consider accessibility of these circuits in the end-use application.
- The following secondary output circuits are at hazardous energy levels: The outputs of Modules F-T
- The following secondary output circuits are at non-hazardous energy levels: The outputs of Modules A-E
- The power supply terminals and/or connectors are: Suitable for field wiring (terminal block)
- 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: Been conducted
- 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 - T6 (Class F, 155°C), L5 (Class F, 155°C)
- The following end-product enclosures are required: Mechanical, Electrical and Fire
- The equipment is suitable for direct connection to: AC mains supply
- Printed Wiring Board rated 130°C.
- Consideration to repeating the Touch Current test should be given in the end-product evaluation.

- Clearances were evaluated for 3048 m altitude. Additional consideration maybe necessary in the end-use product.
- The equipment has been evaluated for building-in only and the equipment enclosures have not been evaluated for being suitable as operator accessible. The end-product evaluation shall additionally consider suitability of the front face enclosure to be operator accessible as applicable.
- The Protective Bonding test shall be repeated as part of end-product evaluation.
- Suitable warning markings to service persons regarding double pole/neutral fusing shall be provided as part of the end-product in accordance with Clause 2.7.6.

Additional Information

The attached Marking Plate for Model N12-CHMR-00A00 is considered representative of the entire series.

These products carry complimentary certification to UL 62368-1 AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT - PART 1: SAFETY REQUIREMENTS- Edition 2 - Issue Date 2014/12/01 / CSA C22.2 NO. 62368-1-14 AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT - PART 1: SAFETY REQUIREMENTS- Edition 2 - Issue Date 2014/12/01.

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
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
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

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
-	-	-	-	-	-	-

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:

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Sample and Test Specifics for Follow-Up Tests at UL

Model	Component	Material	Test	Sample(s)	Test Specifics
-	-	-	-	-	-