

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2011-12-19 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2011-12 (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:	DC-DC Switch Mode Power Supply for building-in
Model:	DCM6048S12, DCM10048S12
Rating:	For DCM6048S12 Input: 42 - 63 Vdc; 2.0 A Output: 12 Vdc; 5.0 A For DCM10048S12 Input: 42 - 63 Vdc; 3.2 A Output: 12 Vdc; 8.3 A
Applicant Name and Address:	XP POWER L L C 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.

Prepared by: Sal Oseguera

Reviewed by: David E. Drewes

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 equipment is a component open frame DC-DC switch mode power supply for building-in. The power supply consists of a single output.

Model Differences

Models are similar, except size, output voltage and current rating, T1 windings, and output connector.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : for building in, to be determined by the end product.
- Operating condition : continuous
- Access location : N/A, for building in
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : DC Mains: +20%, -15%
- 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) : 20
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : 3048
- Altitude of test laboratory (m) : Less than 2000
- Mass of equipment (kg) : 0.3
- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: 50 °C at full load (60W) convection cooled and for a maximum ambient temperature of 60 °C at full load (60W) with 5CFM forced air cooled for model DCM6048S12. For model DCM10048S12: 50 °C at 90% load (90W) convection cooled and for a maximum ambient temperature of 60 °C at full load (100W) with 5CFM forced air cooled.

- The means of connection to the mains supply is: For building in, Connector (J1)
- The product is intended for use on the following power systems: DC mains supply
- The product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 + A12:2010 + A12:2011 (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 end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary to GND: 77 Vpk, 46 V rms, Primary to SEC: 47 Vpk, 68 Vrms
- 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
- An investigation of the protective bonding terminals has: Not conducted, to be evaluated as part of the end product.
- The following end-product enclosures are required: Mechanical, Fire, Electrical
- The following components require special consideration during end-product Thermal (Heating) tests due to the indicated maximum temperature measurements during component-level testing: T1, T2, L1, L2, , Q1, Q9, CR2
- The equipment is suitable for direct connection to: DC mains supply
- CF2.0 - The secondary output circuit is SELV. The SELV at output has been evaluated where outputs are floating, and earthed input . SELV at output compliance shall be determined in end use application
- CF2.1 - The secondary output circuit is at non-hazardous energy levels
- CF2.2 - The following magnetic devices are provided with an OBJY2 insulation system: T1 (Class F); T2 (Class F); L1 (155°C), L2 (155°C); L3 (155°)
- CF2.3 - The power supply PWB has a rated maximum operating temperature of 130°C.
- CF2.4 - The use of suitable mating connectors for connecting to input/output connectors shall be determined at the end use application.
- CF2.5 - The load side of bridging capacitor C17 is Limited Current Circuits.
- CF2.6 - Reinforced Insulation provided between DC input circuits to DC Secondary circuits.
- CF2.7 - Clearance values have been evaluated for an operating altitude of max 3048 m, based on IEC-60664-1 Edition 1.15 altitude correction factor. Consideration should be given to altitude correction for additional clearances introduced during final installation. The equipment is not for use in aircraft.
- CF2.8 - Fuses provided with unambiguous cross-reference to servicing instructions (F1). End product servicing instructions to contain fuse type and ratings; 3 A, 125 V DC for model DCM6048S12; or 5A, 125 V DC for model DCM10048S12.
- CF2.9 - Conducting the following test to be considered as part of the end product: Leakage, Humidity, and Temperature Test

Additional Information

The clearance distances have additionally been assessed for suitability up to 3048 m elevation (1.15 correction factor as per IEC 60664-1, Table A2).

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, IEC 60950-1:2005 + A1:2009, UL 60950-1 2nd Ed. Revised 2011-12-19

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

Special Instructions to UL Representative

N/A

Production-Line Testing Requirements						
<u>Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.</u>						
Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
N/A	--	--	--	--	--	--
<u>Earthing Continuity Test Exemptions - This test is not required for the following models:</u>						
All models						
<u>Electric Strength Test Exemptions - This test is not required for the following models:</u>						
All models						
<u>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:</u>						
--						
<u>Sample and Test Specifics for Follow-Up Tests at UL</u>						
Model	Component	Material	Test	Sample(s)	Test Specifics	
N/A	--	--	--	--	--	--