

CERTIFICATE OF COMPLIANCE

Certificate Number 20181228-E139109
Report Reference E139109-A6066-UL
Issue Date 2018-DECEMBER-28

Issued to: XP POWER L L C
15641 RED HILL AVE, SUITE 100
TUSTIN CA 92780

**This certificate confirms that
representative samples of**

COMPONENT - POWER SUPPLIES FOR USE WITH
AUDIO/VIDEO, INFORMATION AND COMMUNICATION
TECHNOLOGY EQUIPMENT

Switching Power Supply, models MFA350PSXXYY and
MFA420PSXXYY

Where XX is 12, 24, 48, YY is blank, -H, -S, -EF, -TF.

Have been investigated by UL in accordance with the
component requirements in the Standard(s) indicated on
this Certificate. UL Recognized components are incomplete
in certain constructional features or restricted in
performance capabilities and are intended for installation in
complete equipment submitted for investigation to UL LLC.

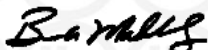
Standard(s) for Safety: UL 62368-1 & CAN/CSA C22.2 No. 62368-1-14,
Audio/video, information and communication technology
equipment Part 1: Safety requirements

Additional Information: See the UL Online Certifications Directory at
<https://iq.ulprospector.com> for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified
and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.



Bruce Mahrenholz, Director North American Certification Program
UL LLC

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contact a local UL Customer Service Representative at <http://ul.com/aboutul/locations/>



UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 2nd Ed, 2014-12-01 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1-14, 2nd Ed (Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Component Recognition
CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	Switching Power Supply
Model:	MFA350PSXXYY MFA420PSXXYY Where XX is 12, 24, 48, YY is blank, -H, -S, -EF, -TF.
Rating:	MFA350PSXXYY: INPUT ~ 100-240VAC 50/60Hz 4.7A MFA420PSXXYY: INPUT ~ 100-240VAC 50/60Hz 5.5A 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.

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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. It is an open frame power supply intended for building-in Class I.

Model Differences

All models in the MFA420PSXXYY Series are identical with exception to the minor changes to the Mains Transformer (T3) and minor secondary components that allow for different output voltage ratings. The MFA350PSXXYY Series is identical to the MFA420PSXXYY Series for the respective output voltage rating with exception to the lower output rating. See below for rating details.

Models MFA350PSXXYY and MFA420PSXXYY

Where XX is 12, 24, or 48 designating output voltage.

Where YY is as follows:

-H = Provided with a hot swappable output connector and an input appliance inlet

-S = Provided with screw terminal input connector

-EF = Provided with a cover with an End Fan

-TF = Provided with a cover with a Top Fan

Blank = Basic construction model with no special configuration

Model Ratings for MFA350PSXXYY Series at 50°C:

Model MFA350PS12YY: Output Rated: 12 Vdc, 29 A

Model MFA350PS24YY: Output Rated: 24 Vdc, 14.5 A

Model MFA350PS48YY: Output Rated: 48 Vdc, 7.3 A

Model Ratings for MFA420PSXXYY Series at 50°C:

Model MFA420PS12YY: Output Rated: 12 Vdc, 35 A

Model MFA420PS24YY: Output Rated: 24 Vdc, 17.5 A

Model MFA420PS48YY: Output Rated: 48 Vdc, 8.8 A

All models are provided with a Fan Output (12 Vdc, 1 A) and a Standby Output (5 Vdc, 0.5A).

50°C at 100% of rated output, 70°C at 50% of rated output.

Test Item Particulars

Classification of use by	Ordinary person
Supply Connection	AC Mains
Supply % Tolerance	+10%/-10%
Supply Connection – Type	For building-in
Considered current rating of protective device as part of building or equipment installation	20 A; building;
Equipment mobility	for building-in
Over voltage category (OVC)	OVC II
Class of equipment	Not Classified
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient	See Model Differences section. °C
IP protection class	IPX0
Power Systems	TN
Altitude during operation (m)	3048 m
Altitude of test laboratory (m)	2000 m or less

Mass of equipment (kg)	0.612 kg
Technical Considerations <ul style="list-style-type: none">• 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% of rated output, 70°C at 50% of rated output.• The product is intended for use on the following power systems : TN•• The equipment disconnect device is considered to be : To be determined in the end-product.• 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. The correction factor is based on barometric pressure of 70kPa. If the calculated Clearance exceeded the Creepage, the Creepage was adjusted to the value of clearance.	
Engineering Conditions of Acceptability <p>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:</p> <ul style="list-style-type: none">• The following product-line tests are conducted for this product : Electric Strength• The following output circuits are at ES1 energy levels : All Outputs• The following output circuits are at PS3 energy levels : All Outputs• 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 (Class I)• An investigation of the protective bonding terminals has : Not been conducted•• The following input terminals/connectors must be connected to the end-product supply neutral : AC N• The following end-product enclosures are required : Mechanical, Fire, Electrical• 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) : L1-L3, L5, T1-T4 (Class F)• The power supply was evaluated to be used at altitudes up to : "3048 m"•• When installed in a Class I end product, the power supply shall be mounted in a manner that provides the minimum required Clearance between the primary side of power supply and protectively earthed accessible conductive parts.• Heatsinks are floating and considered live. They should not be accessible in the end-product.• A suitable main disconnect device shall be provided in the end product.• Consideration to repeating the Touch Current test should be given in the end-product evaluation.• The power supplies in this report have been subject to Capacitance Discharge testing. Additionally, all associated component safeguards have been assessed to the applicable requirement in Annex G.10. Additional testing should not be needed if directly connected to mains e.g. using an appliance inlet, wiring terminals, etc.	

Additional Information

Marking Plate is representative of all models.

This report is based on a previous evaluation to IEC 60950-1:2005 (2nd Ed.), Am1:2009 + Am2:2013 under CBTR Ref. No. E139109-A44-CB-3 including Amendments, CBTC Ref. No. US-25791-UL. Based on the previously conducted performance testing, only the tests conducted as part of this investigation were considered necessary.

The following tests were conducted under CTDP SMT/CTF Stage 3 to IEC 60950-1 E2+A1+A2 at XP POWER LLC, 15641 RED HILL AVE, SUITE 100, TUSTIN, CA 92780, USA:

Input: Single-Phase (1.6.2)

Capacitance Discharge (2.1.1.7)

SELV Reliability Test Including Hazardous Voltage Measurements (2.2.2, 2.2.3, 2.2.4, Part 22 6.1)

Humidity (2.9.1, 2.9.2, 5.2.2)

Determination of Working Voltage; Working Voltage Measurement (2.10.2)

Distance Through Insulation Measurements (2.10.5)

Heating (4.5.1, 1.4.12, 1.4.13)

Ball Pressure (4.5.5, 4.5)

Electric Strength (5.2.2)

Component Failure (5.3.1, 5.3.4, 5.3.7)

Abnormal Operation (5.3.1 - 5.3.9)

Transformer Abnormal Operation (5.3.3, 5.3.7b, Annex C.1)

Power Supply Output Short-Circuit/Overload (5.3.7)

The following additional tests were conducted on a sample of model MFA420PS12 in accordance with IEC 62368-1:2014 (Second Edition) at XP POWER LLC, 15641 RED HILL AVE, SUITE 100, TUSTIN, CA 92780 USA:

Electric Strength Test (5.4.9)

Prospective Touch Voltage and Touch Current Measurement (5.7)

Additional Standards

The product fulfills the requirements of: EN 62368-1:2014 + A11:2017

Markings and Instructions

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listees or Recognized companys name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number
Equipment rating marking – ratings	"Input Ratings (voltage, frequency/dc, current/power)", "Output Ratings (voltage, frequency/dc, current/power)"

Special Instructions to UL Representative

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BD1.0	TABLE: Production-Line Testing Requirements					
BD1.1	Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.					
Model	Component	Removable parts	Test probe location	Test V rms	Test V dc	Test Time, s
All Models	Transformer T1	--	Primary to Secondary	2830	4000	1
All Models	Transformer T2	--	Primary to Secondary	2830	4000	1
All Models	Transformer T3	--	Primary to Secondary	2830	4000	1
All Models	Transformer T4	--	Primary to Secondary	2830	4000	1
BD1.2	Earthing Continuity Test Exemptions – This test is not required for the following models:					
	All models exempt.					
BD1.3	Electric Strength Test Exemptions – This test is not required for the following models:					
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BD1.4	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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BE1.0	Sample and Test Specifics for Follow-Up Tests at UL				
Model	Component	Material	Test	Sample (s)	Test Specifics