

CERTIFICATE OF COMPLIANCE

Certificate Number 20181031-E139109
Report Reference E139109-A6042-UL
Issue Date 2018-OCTOBER-31

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

**This is to certify that
representative samples of**


Power Supplies for Use in Audio/Video, Information and
Communication Technology Equipment
See Addendum.

Have been investigated by UL in accordance with the
Standard(s) indicated on this Certificate.

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
www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's
Certification and Follow-Up Service.

The UL Recognized Component Mark generally consists of the manufacturer's identification and catalog
number, model number or other product designation as specified under "Marking" for the particular
Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products
that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark:
, may be used in conjunction with the required Recognized Marks. The Recognized Component Mark is
required when specified in the UL Directory preceding the recognitions or under "Markings" for the individual
recognitions.

Recognized components are incomplete in certain constructional features or restricted in performance
capabilities and are intended for use as components of complete equipment submitted for investigation rather
than for direct separate installation in the field. The final acceptance of the component is dependent upon its
installation and use in complete equipment submitted to UL LLC.

Look for the UL Certification 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/about/locations/>



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This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Switching Power Supply Model: ECS45US05, ECS45USXX, ECS25USXX; Where XX can be any number between 12 and 48. May also be followed by suffix SF, -C, -S, or all.



Bruce Mahrenholz, Director North American Certification Program

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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:	ECS45US05 ECS45USXX ECS25USXX Where XX can be any number between 12 and 48. May also be followed by suffix SF, -C, -S, or all.
Rating:	Input Rating: Model ECS45US05 and Model ECS45USXX Series: ~ 100 - 240VAC 50/60Hz 0.9 A Model ECS25USXX Series: ~ 100 – 240VAC 50/60Hz 0.6 A Output Rating: 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: Rodney Reyes / Tester

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 Class I or Class II end-products. Double insulated symbol is optionally provided. Earthing symbol may only be provided for Class I power supplies.

Model Differences

All models in the Model ECS45USXX 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 at 50°C Table Below:

Model ECS45US05: Output Rated: 5 Vdc, 6 A

Model ECS45US12: Output Rated: 12 Vdc, 3.75 A

Model ECS45US15: Output Rated: 15 Vdc, 3.00 A

Model ECS45US24: Output Rated: 24 Vdc, 1.90 A

Model ECS45US48: Output Rated: 48 Vdc, 0.95 A

All respective models in the Model ECS25USXX Series are identical Model ECS45USXX Series, except for the lower output power rating and the heatsinks (HS1, HS2) are not provided. See below for Model Ratings at 50°C Table Below:

Model ECS25US12: Output Rated: 12 Vdc, 2.08 A

Model ECS25US15: Output Rated: 15 Vdc, 1.67 A

Model ECS25US24: Output Rated: 24 Vdc, 1.04 A

Model ECS25US48: Output Rated: 48 Vdc, 0.52 A

See Enclosure - Miscellaneous for details on de-rated outputs based upon higher ambients.

Suffix "SF" indicates single fuse provided in the line side of the primary.

Units provided with suffix "-C" provided with cover.

Units provided with suffix "-S" provided with screw terminal.

Test Item Particulars

Classification of use by

Ordinary person

Supply Connection	AC Mains ES1
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 OVC II
Class of equipment	Not Classified
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient	50°C (See De-rating Curve, Enclosures for details) °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)	0.17

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of : 50°C (See De-rating Curve, Enclosures for details)
- The product is intended for use on the following power systems : TN
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- 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.
- Power supplies covered by this report were evaluated for both Class I and Class II (double insulated). Double insulated symbol is optionally provided. Earthing symbol may only be provided for Class I power supplies.

Engineer 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 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
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- 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
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- 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
- 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) : L1, L2, L3 and T1 (Class F, 155°C)
- The power supply was evaluated to be used at altitudes up to : "3048 m"
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- 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.
- When installed in a Class II end product, the power supply shall be mounted on insulating posts in a manner that provides the minimum required Clearance between the power supply and any 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.
- The power supplies covered by this report have a fuse in the neutral of the primary circuit. The need for a marking to warn a service person of the hazards associated with double pole/neutral fusing shall be considered 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. 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 + Am2:20013 under CBTR Ref. No. E139109-A47-CB-3 including Amendments, CBTC Ref. No. US-25004-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)

Heating (4.5.1, 1.4.12, 1.4.13)

Ball Pressure (4.5.5, 4.5)

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 ECS45US05 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)"
Warning to service personnel	"CAUTION: Double pole, neutral fusing. Disconnect mains before servicing. "/"ATTENTION. Double pôle/fusible sur le neutre. Débrancher l'alimentation avant l'entretien."

Special Instructions to UL Representative

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BD1.0	TABLE: Product-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	3000	--	1
BD1.2	Earthing Continuity Test Exemptions – This test is not required for the following models:					
	--					
BD1.3	Electric Strength Test Exemptions – This test is not required for the following models:					
	--					
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