



Test Report issued under  
the responsibility of:



**TEST REPORT**  
**IEC 60950-1**  
**Information technology equipment - Safety -**  
**Part 1: General requirements**

**Report Reference No** .....: E139109-A25-CB-3

Date of issue .....: 2015-07-27

Total number of pages .....: 73

**CB Testing Laboratory** .....: UL San Jose

Address .....: 455 E. Trimble Rd., San Jose, CA, 95131-1230, USA

**Applicant's name** .....: XP POWER L L C  
15641 RED HILL AVE, SUITE 100

Address .....: TUSTIN CA 92780  
UNITED STATES

**Test specification:**

Standard .....: IEC 60950-1:2005 (Second Edition); Am1:2009 + Am2:2013

Test procedure .....: CB Scheme

Non-standard test method .....: N/A

**Test Report Form No.** .....: IEC60950\_1F

Test Report Form originator .....: SGS Fimko Ltd

Master TRF .....: Dated 2014-02

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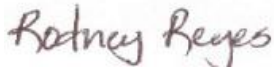


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<b>Test item description</b> .....	Switching Power Supply Series
Trade Mark .....	
Manufacturer .....	XP POWER L L C 15641 RED HILL AVE, SUITE 100 TUSTIN CA 92780 UNITED STATES
Model/Type reference .....	HPU1K5PSXX, where XX can be any number 12-48 indicating output voltage. May also be provided with additional suffix "SF" indicating Single Fuse or "-M".
Ratings .....	Input: 100-240 Vac, 50/60 Hz, 16.5 A  Output: See Model Differences.

<b>Testing procedure and testing location:</b>	
<input type="checkbox"/>	<b>CB Testing Laboratory</b> Testing location / address .....:
<input type="checkbox"/>	<b>Associated CB Test Laboratory</b> Testing location / address .....: Tested by (name + signature) .....: _____ Approved by (name + signature).....: _____
<input type="checkbox"/>	<b>Testing Procedure: TMP/CTF Stage 1</b> Testing location / address .....: Tested by (name + signature) .....: _____ Approved by (name + signature).....: _____
<input type="checkbox"/>	<b>Testing Procedure: WMT/CTF Stage 2</b> Testing location / address .....: Tested by (name + signature) .....: _____ Witnessed by (name + signature) ...: _____ Approved by (name + signature).....: _____
<input checked="" type="checkbox"/>	<b>Testing Procedure: SMT/CTF Stage 3 or 4</b> Testing location / address .....: XP Power LLC, 15641 Red Hill Ave., Suite 100, Tustin, CA 92780, USA Tested by (name + signature) .....: Rodney Reyes  Approved by (name + signature).....: Tac Pham  Supervised by (name + signature) ..: Luis Martinez 
<input type="checkbox"/>	<b>Testing Procedure: RMT</b> Testing location / address .....: Tested by (name + signature) .....: _____ Approved by (name + signature).....: _____ Supervised by (name + signature) ..: _____

<b>List of Attachments</b>	
National Differences (42 pages)	
Enclosures (91 pages)	
<b>Summary Of Testing</b>	
Unless otherwise indicated, all tests were conducted at XP Power LLC, 15641 Red Hill Ave., Suite 100, Tustin, CA 92780, USA.	
<b>Tests performed (name of test and test clause)</b>	<b>Testing location / Comments</b>

Input: Single-Phase (1.6.2)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).
Energy Hazard Measurements (2.1.1.5, 2.1.2, 1.2.8.10)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).
Capacitance Discharge (2.1.1.7)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).
SELV Reliability Test Including Hazardous Voltage Measurements (2.2.2, 2.2.3, 2.2.4, Part 22 6.1)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).
Protective Bonding II (2.6.3.4, 2.6.1)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).
Humidity (2.9.1, 2.9.2, 5.2.2)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).
Determination of Working Voltage; Working Voltage Measurement (2.10.2)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).
Transformer and Wire /Insulation Electric Strength (2.10.5.13)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).
Heating (4.5.1, 1.4.12, 1.4.13)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).
Ball Pressure (4.5.5, 4.5)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).
Electric Strength (5.2.2)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).
Component Failure (5.3.1, 5.3.4, 5.3.7)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).
Abnormal Operation (5.3.1 - 5.3.9)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).
Transformer Abnormal Operation (5.3.3, 5.3.7b, Annex C.1)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).
Power Supply Output Short-Circuit/Overload (5.3.7)	Evaluated under previous CB Scheme investigation (CBTR E139109-A25-CB-2, CBTC. US-13910-UL).

#### Summary of Compliance with National Differences:

Countries outside the CB Scheme membership may also accept this report.

List of countries addressed: AT, BE, BG, BY, CA, CH, CZ, DE, DK, ES, EU, FI, FR, GB, GR, HU, IE, IL, IT,

JP, KR, NL, NO, PL, PT, RO, SE, SG, SI, SK, UA, US

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

**Copy of Marking Plate** - Refer to Enclosure titled Marking Plate for copy.

**Test item particulars :**

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 .....	+6%, -10%
Tested for IT power systems .....	Yes
IT testing, phase-phase voltage (V) .....	230
Class of equipment .....	Class I (earthed)
Considered current rating of protective device as part of the building installation (A) .....	20A
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) .....	3

**Possible test case verdicts:**

- test case does not apply to the test object ..... : N / A
- test object does meet the requirement ..... : P(Pass)
- test object does not meet the requirement ..... : F(Fail)

**Testing:**

Date(s) of receipt of test item .....	2013-03-06, 2008-12-01
Date(s) of Performance of tests .....	2013-03-06 to 2013-03-07, 2008-12-02 to 2009-05-20

**General remarks:**

"(see Enclosure #)" refers to additional information appended to the report.  
 "(see appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

**Manufacturer's Declaration per Sub Clause 4.2.5 of IEC 60950-1:**

Yes

The application for obtaining a CB Test Certificate includes more than one factory and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....

When differences exist, they shall be identified in the General Product Information section.

**Name and address of Factory(ies):** XP POWER INC  
 990 BENECIA AVE  
 US  
 SUNNYVALE CA 94085-2804  
 UNITED STATES

XP POWER (KUNSHAN) LTD  
230 BIN JIANG NAN RD  
ZHANGPU TOWN  
KUNSHAN  
JIANGSU 215321 CHINA

XP POWER (VIETNAM) CO LTD  
LOT D - 4Q - CN  
MY PHUOC 3 INDUSTRIAL PARK  
BEN CAT DISTRICT  
BINH DUONG VIET NAM

XP POWER PLC  
HORESHOE PARK  
PANGBOURNE  
RG87 JW UNITED KINGDOM

## GENERAL PRODUCT INFORMATION:

### Report Summary

All applicable tests according to the referenced standard(s) have been carried out.

### Product Description

The product is a component AC-DC power supply for building-in, provided with an overall metal enclosure, incorporating primary and SELV components.

The main PWB is secured to the chassis bottom by multiple machine screws. An insulating sheet is installed between PWB and chassis, wrapped around the board assembly, covering the sides and extending over the top. The control PWB is mounted vertically on the side of the main PWB and secured by multi-pin soldering.

The unit is provided with 2 cooling fans mounted internally behind the rear panel acting as fan guard.

### Model Differences

The power supplies in the series are differentiated by the output voltage and current ratings, number of turns of primary/secondary windings in the Transformers (T2 (Power)) and minor differences in the secondary circuit components and PWB layout.

See below for Model Ratings Table Below:

Model HPU1K5PS12: Output Rated: 10.1 Vdc to 13.5 Vdc, 100 A Max (1200 W)

Model HPU1K5PS15: Output Rated: 13.6 Vdc to 17 Vdc, 80 A Max (1200 W)

Model HPU1K5PS18: Output Rated: 17.1 Vdc to 21 Vdc, 66.7 A (1200 W)

Model HPU1K5PS24: Output Rated: 21.1 Vdc to 26 Vdc, 50 A (1200 W)

Model HPU1K5PS24: Output Rated: 21.1 Vdc to 26 Vdc, 62.5 A Max (1500 W for Input rated: 180-240 Vac)

Model HPU1K5PS28: Output Rated: 26.1 Vdc to 31 Vdc, 43 A (1200 W)

Model HPU1K5PS28: Output Rated: 26.1 Vdc to 31 Vdc, 53 A Max (1500 W for Input rated: 180-240 Vac)

Model HPU1K5PS33: Output Rated: 31.1 Vdc to 33 Vdc, 36.4 A (1200 W)

Model HPU1K5PS33: Output Rated: 31.1 Vdc to 33 Vdc, 45.5 A Max (1500 W for Input rated: 180-240 Vac)

Model HPU1K5PS36: Output Rated: 33.1 Vdc to 42 Vdc, 33.3 A (1200 W)

Model HPU1K5PS36: Output Rated: 33.1 Vdc to 42 Vdc, 41.7 A Max (1500 W for Input rated: 180-240 Vac)

Model HPU1K5PS48: Output Rated: 42.1 Vdc to 54 Vdc, 25 A (1200 W)

Model HPU1K5PS48: Output Rated: 42.1 Vdc to 54 Vdc, 31.25 A (1500 W for Input rated: 180-240 Vac)

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

Suffix "-M" is identical to HPU1K5PSXX except for model designation for marketing purposes.

See Enclosure-Miscellaneous for details.

### Additional Information

This report is a reissue of CBTR Ref. No. E139109-A25-CB-2, CB Test Certificate Ref. No. US-21115-UL and US-21115-A1-UL. Based on the previously conducted testing and the review of product technical documentation including photos, schematics, wiring diagrams and similar, only limited testing was deemed necessary and has been determined that the product complies with the upgrade of the Second Edition of the Standard to Amendment 1.

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

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.

### Technical Considerations

- 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).
- 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. The correction factor is based on barometric pressure of 70kPa and Overvoltage Category II. If the calculated Clearance exceeded the Creepage, the Creepage was adjusted to the value of clearance. No other additional requirements were considered at this time as they are not explicitly addressed in UL 60950-1. --
- The product was submitted and evaluated for use at the maximum ambient temperature (T<sub>ma</sub>) permitted by the manufacturer's specification of: Full-rated output load: 50°C. 75% of output load: 60°C. Half-rated output load: 70°C. --
- The means of connection to the mains supply is: for building-in, to be determined in the end-product. --
- The product is intended for use on the following power systems: TN IT --

### Engineering Conditions of Acceptability

When installed in an end-product, consideration must be given to the following:

- The equipment may be provided with a fuse in both the Line and Neutral of the primary circuit. The need for a marking warning service person of the hazards associated with neutral fusing shall be considered in the end-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: 235 Vrms, 494 Vpk, Primary-SELV: 254 Vrms, 644 Vpk, --



- The following secondary output circuits are SELV: All outputs --
- The following secondary output circuits are at hazardous energy levels: DC Output Buss --
- 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 been conducted. The suitability of the protective bonding terminal shall be evaluated in the end system., --
- The following input terminals/connectors must be connected to the end-product supply neutral: AC-N, neutral terminal is provided as part of the input terminal block, however the unit is for building and compliance shall be determined in the end product. , --
- 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, L4, L5, L6, L7, L8, T1(Bias), T2(Power), T1 (Drive), T3 (Drive), T4 (Current). T5 (Current) are Class F (155°C), --
- The following end-product enclosures are required: Electrical, Mechanical, Fire, --
- The following components require special consideration during end-product Thermal (Heating) tests due to the indicated maximum temperature measurements during component-level testing: L6 (124°C), T2 (123°C), L7 (113°C), L8 (115°C), --
- Fans: The fan provided in this sub-assembly is not intended for operator access. Compliance shall be determined in the end product. , --

Abbreviations used in the report:

- normal condition .....	N.C.	- single fault condition .....	S.F.C
- operational insulation .....	OP	- basic insulation .....	BI
- basic insulation between parts of opposite polarity:	BOP	- supplementary insulation .....	SI
- double insulation .....	DI	- reinforced insulation .....	RI

Indicate used abbreviations (if any)