Test Report issued under the responsibility of:

TEST REPORT
IEC 62368-1
Audio/video, information and communication technology equipment
Part 1: Safety requirements

Report Number .....:	E317867-A6027-CB-1
Date of issue.....:	2018-12-17
Total number of pages .....:	90
Applicant's name.....:	**XP POWER L L C**
Address .....:	**15641 RED HILL AVE, SUITE 100** **TUSTIN CA 92780** **UNITED STATES**
Name of Test Laboratory preparing the Report .....:	UL Fremont 47173 Benicia Street, Fremont, CA, 94538, USA
Test specification:	
Standard .....:	IEC 62368-1:2014 (Second Edition)
Test procedure .....:	CB Scheme
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC62368_1B
Test Report Form(s) Originator .....:	UL(US)
Master TRF.....:	2014-03

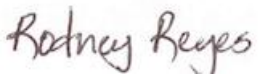
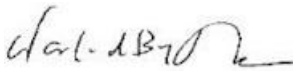
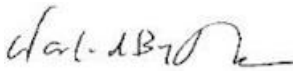
This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory.
The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test Item description :	Switching Power Supply for building-in
Trade Mark .....:	
Manufacturer .....:	XP POWER L L C 15641 RED HILL AVE, SUITE 100 TUSTIN CA 92780 UNITED STATES
Model/Type reference .....:	ECP225PSXX-Y (where XX can be any number between 12 and 48 designating the output voltage, -Y can be -A or blank to represent additional 5V standby output), may also be provided with suffix "SF" or "3X5"
Ratings .....:	Input: 100-240 Vac, 50/60 Hz, 3.0 A Output: See Model Differences for Output Ratings details.

Testing procedure and testing location:			
☐	CB Testing Laboratory:		
Testing location/ address ..... :			
☐	Associated CB Testing Laboratory:		
Testing location/ address..... :			
	Tested by (name + signature).....:		
	Approved by (name + signature) .....:		
☐	Testing procedure: TMP/CTF Stage 1		
Testing location/ address..... :			
	Tested by (name + signature).....:		
	Approved by (name + signature) .....:		
☐	Testing procedure: WMT/CTF Stage 2		
Testing location/ address..... :			
	Tested by (name + signature).....:		
	Witnessed by (name + signature).....:		
	Approved by (name + signature) .....:		
☒	Testing procedure: SMT/CTF Stage 3 or 4		

Testing location/ address..... :	XP Power LLC, 15641 RED HILL AVE, SUITE 100, TUSTIN, CA 92780 USA	
Tested by (name + signature).....:	Rodney Reyes / Tester	
Approved by (name + signature) .....:	Walid Beytoughan / Reviewer	
Supervised by (name + signature) .....:	Walid Beytoughan / Reviewer	

List of Attachments (including a total number of pages in each attachment):

National Differences (23 pages)
Enclosures (62 pages)

Summary of testing:

Unless otherwise indicated, all tests were conducted at XP Power LLC, 15641 RED HILL AVE, SUITE 100, TUSTIN, CA 92780 USA .

Tests performed (name of test and test clause):	**Testing location:**
CLASSIFICATION OF ELECTRICAL ENERGY SOURCES (5.2, 5.7) MAXIMUM OPERATING TEMPERATURE FOR MATERIALS, COMPONENTS AND SYSTEMS (5.4.1.4, Annex B.2) MAXIMUM OPERATING TEMPERATURE FOR MATERIALS, COMPONENTS AND SYSTEMS (5.4.1.4, 6.2, 9.2.5 ANNEX B.2) DETERMINATION OF WORKING VOLTAGE (5.4.1.8) BALL PRESSURE TEST (5.4.1.10.3) SEPARABLE THIN SHEET MATERIAL (5.4.4.6.2) HUMIDITY CONDITIONING (5.4.8) ELECTRIC STRENGTH TEST (5.4.9) SAFEGUARDS AGAINST CAPACITOR DISCHARGE AFTER DISCONNECTION OF A CONNECTOR (5.5.2.2) PROSPECTIVE TOUCH VOLTAGE AND TOUCH CURRENT MEASUREMENT (5.7) ARCING PIS DETERMINATION (6.2.3.1) RESISTIVE PIS DETERMINATION (6.2.3.2) NORMAL OPERATING CONDITIONS TEMPERATURE TEST (6.3) INPUT TEST: SINGLE PHASE (B.2.5) NORMAL OPERATING CONDITIONS TEMPERATURE MEASUREMENT (B.2.6) SIMULATED ABNORMAL OPERATING CONDITIONS (B.3) SIMULATED SINGLE FAULT CONDITIONS (B.4) TEST FOR THE PERMANENCE OF MARKINGS (ANNEX F.3.10) TRANSFORMER OVERLOAD (ANNEX G.5.3.3)	XP Power LLC, 15641 RED HILL AVE, SUITE 100, TUSTIN, CA 92780 USA

Summary of compliance with National Differences:

List of countries addressed: AU,NZ, EU Group Differences, US,CA

☒ **The product fulfils the requirements of:** EN 62368-1:2014 + A11:2017, CSA CAN/CSA-C22.2 NO. 62368-1 2nd Ed, Issued December 1, 2014

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

TEST ITEM PARTICULARS:	
Classification of use by	Skilled 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	50°C for 100% load; 70°C for 50% load, 85 °C for 25% load at convectional cooling and 40% at force air cooling. See Enclosure ID 7-02 for derating details. °C
IP protection class	IPX0
Power Systems	TN
Altitude during operation (m)	5000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	0.35 kg
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 of receipt of test item..... :	2018-10-15
Date (s) of performance of tests..... :	2018-10-15
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 ☐ comma / ☒ point is used as the decimal separator.**	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location 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 ..... :	☒ **Yes** ☐ **Not applicable**

When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) ..... :	ABES TECHNOLOGY CO LTD NO 78-1 ZHANGMA ST XIUSHUI TOWNSHIP CHANGHUA COUNTY 504 TAIWAN XP POWER (KUNSHAN) LTD 230 BIN JIANG NAN RD ZHANGPU TOWN KUNSHAN JIANGSU 215300 CHINA XP POWER (VIETNAM) CO LTD LOT D - 4Q - CN MY PHUOC 3 INDUSTRIAL PARK BEN CAT DISTRICT BINH DUONG VIETNAM

GENERAL PRODUCT INFORMATION:

Report Summary

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

Product Description

The product is a AC/DC switching mode power supply with open-frame type, and it is intended for building-in from factory installation as a component of the end product Information Technology Equipment (ITE).

Model Differences

All models in the Model ECP225PSXX-Y series are identical with exception to the Mains Transformer, TR1, and minor secondary components that allow for different output voltage ratings.

Additional Suffix "SF" denotes units provided with only a single line side fuse.

Additional suffix "3X5" denotes extended PCB with no change in the PCB traces. Refer to Enclosure 5-01 for 2.5x5 PCB size and 5-03 for 3X5 PCB size.

Additional suffix "A" denotes unit with 5V standby output (V2). See below for standby output ratings:

Convection cooling - 5Vdc, 1A

Forced cooling - 5Vdc, 2A

See Miscellaneous Enclosure 7-02 for Output Range.

Units are provided with additional output to power an external fan. See below for external fan output ratings:

ECP225PSXX: V2: 12V, 0.5A

ECP225PSXX-A: V3: 12V, 0.5A

Maximum Output Load conditions:

Condition A: Convectional Cooling at Tma=50°C, 100% load :
ECP225PS12: 12 Vdc, 12.5 A
ECP225PS15: 15 Vdc, 10.0 A
ECP225PS24: 24 Vdc, 6.25 A
ECP225PS28: 28 Vdc, 5.36 A
ECP225PS48: 48 Vdc, 3.1 A

Condition B: Convectional Cooling at Tma=70°C, 50% load :
ECP225PS12: 12 Vdc, 6.25 A
ECP225PS15: 15 Vdc, 5.0 A
ECP225PS24: 24 Vdc, 3.13 A
ECP225PS28: 28 Vdc, 2.68 A
ECP225PS48: 48 Vdc, 1.55 A

Condition C: Force air cooling at Tma=50°C, 100% load :
ECP225PS12: 12 Vdc, 18.75 A
ECP225PS15: 15 Vdc, 15.0 A
ECP225PS24: 24 Vdc, 9.38 A
ECP225PS28: 28 Vdc, 8.04 A
ECP225PS48: 48 Vdc, 4.69 A

Condition D: Force air cooling at Tma=70°C, 50% load :
ECP225PS12: 12 Vdc, 9.38 A
ECP225PS15: 15 Vdc, 7.5 A
ECP225PS24: 24 Vdc, 4.69 A
ECP225PS28: 28 Vdc, 4.02 A
ECP225PS48: 48 Vdc, 2.35 A

Additional application considerations – (Considerations used to test a component or sub-assembly) -

This report was based on testing previously conducted under CBTR Ref. No. E317867-A71-CB-2, Amendment 1, CB Test Certificate Ref. No. US-48683-UL and US-48683-A1-UL to IEC 60950-1:2005 (Second Edition), Am1:2009 + Am2:2013. The required tests carried out as part of the previous investigation were used to determine compliance with 62368-1 requrirements. Based on the results of previous evaluation, additional testing, and a current review of the product construction, it was determined that the products comply with the standards UL/IEC 62368-1.

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 50°C for 100% load; 70°C for 50% load.
- The product is intended for use on the following power systems : TN
- Considered current rating of protective device as part of the building installation (A) : 20
- Mains supply tolerance (%) or absolute mains supply values : +10%/-10%
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- • According to IEC60664-1, Table A2, required Clearances have been adjusted by multiplying the clearance at sea level by a factor of 1.48 for operating at an altitude of 5000 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.
- • The following accessible locations (with circuit/schematic designation) are within a limited current circuit: Load side of CY7, CY8, CY9.

Engineering Conditions of Acceptability

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 end-product Electric Strength Test is to be based upon a maximum working voltage of : 2500Vpk (Mains Transient Voltage)
- The following output circuits are at ES1 energy levels : All circuits
- The following output circuits are at PS3 energy levels : All circuits
- 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 when installed in a Class I end product.
- The following end-product enclosures are required : Fire, Electrical, Mechanical
- 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) : TR1 - Class B (130)
- The power supply was evaluated to be used at altitudes up to : "5,000 m"