CERTIFICATE OF COMPLIANCE

Certificate Number	20190413-E139109
Report Reference	E139109-A6033-UL
Issue Date	2019-April-13
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 AC-DC Power Supply CHD250PSXX-YY Where XX is between 12-48, YY is SF or blank. May also be provided with additional suffixes "-S", "-C", "-L", and/or "A". All "-" are optional.
	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 and 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

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:	AC-DC Power Supply
Model:	CHD250PSXX-YY Where XX is between 12-48, YY is SF or blank. May also be provided with additional suffixes "-S", "-C", "-L", and/or "A". All "-" are optional.
Rating:	INPUT ~ 100-240VAC 50/60Hz 3.1A MAX Output: See Model Differences section and miscellaneous enclosures.
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: 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 models covered in this Test Report are component AC-DC power supplies intended for use in Information Technology Equipment. Open frame switching power supplies intended for building-in.

Model Differences

All models in the CHD250PSXX-YY Series are identical with exception to the Mains Transformer (T1) and minor secondary components that allow for different output voltage ratings.

XX is between 12-48 indicating main output voltage.

YY is SF indicating single fuse in the line side of the primary, or blank.

May also be provided with additional suffixes "-S", "-C", "-L", and/or "-A" ("-" optional).

"-C" indicates the model is provided with cover.

"-S" indicates the model is provided with screw terminal.

"-L" indicates the model is provided with input leads.

"-A" indicates the model is provided with 5V Stand-by output rated 5Vdc, 1A at 50°C, 0.5A at 70°C.

Output Ratings (Convection Cooling, No 5V Standby, No Cover, 50°C Ambient)

CHD250PS12: 10.1Vdc to 13.5Vdc, 20.8A Max. 250 W Max.

CHD250PS15: 13.6Vdc to 17Vdc, 16.7A Max. 250 W Max.

CHD250PS18: 17.1Vdc to 21Vdc, 13.9A Max. 250 W Max.

CHD250PS24: 21.1Vdc to 26Vdc, 10.4A Max. 250 W Max.

CHD250PS28: 26.1Vdc to 31Vdc, 8.93A Max. 250 W Max.

CHD250PS33: 31.1Vdc to 33Vdc, 7.58A Max. 250 W Max.

CHD250PS36: 33.1Vdc to 42Vdc, 6.94A Max. 250 W Max.

CHD250PS48: 42.1Vdc to 54Vdc, 5.2A Max. 250 W Max.

See miscellaneous enclosures for additional information regarding output ratings and the various configurations.

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	See miscellaneous enclosures. °C
IP protection class	IPX0
Power Systems	TN IT - 230 V L-L
Altitude during operation (m)	5000 m
Altitude of test laboratory (m)	17 m
Mass of equipment (kg)	0.45 kg kg

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : See miscellaneous enclosures.
- The product is intended for use on the following power systems : TN, IT (230 V L-L)
- 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 equipment disconnect device is considered to be : For building-in, to be determined in the end use installation.
- The internal wiring is certified Appliance Wiring Material rated VW-1 and/or FT-1 which were considered equivalent to the tests of IEC60332-1-2 and IEC60332-1-3. The final acceptability of the internal wiring may be determined under the discretion of the receiving NCB.
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: Load side of C33 (Pri to Sec bridging capacitor).
- In accordance with IEC60664-1, Table A2, required clearances were adjusted by multiplying the clearance at sea level by a factor of 1.48 for operating at an altitude of 5000 m. The correction factor is based on barometric pressure of 54 kPa and Overvoltage Category II. If the calculated clearance exceeded the creepage, the creepage was adjusted to the value of clearance.

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 following product-line tests are conducted for this product : Electric Strength
- The following output circuits are at ES1 energy levels : All
- The following output circuits are at PS3 energy levels : All
- The maximum investigated branch circuit rating is : 20A
- 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 following end-product enclosures are required : Mechanical, Electrical, 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) : T1, T2, T3, T1-Standby (Class F, 155°C)
- The following components require special consideration during end-product Thermal (Heating) tests due to the indicated maximum temperature measurements during component-level testing : PWB is rated 130°C
- The power supply was evaluated to be used at altitudes up to : 5,000 m
- The power supplies covered by this report have a fuse in the neutral of the primary circuit. A warning for service persons is provided on the marking plate. Additional warnings to be considered in the end product.
- The end-product Electric Strength Test is to be based upon a Mains Transient Voltage of 2500Vdc for Basic and 4000Vdc for Reinforced. Consideration shall be given to repeating the test at 2500 volts Dc for basic insulation and 4000 V DC for reinforced insulation in the end product.
- The power supply terminals and/or connectors are suitable for factory wiring only.
- Proper bonding to the end-product main protective earthing termination is: required when the power supply is used in a Class I end product.
- 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.
- Clearances were evaluated for 5000m altitude. Additional consideration maybe necessary in the end-use product.
- Consideration to repeating the Touch Current test should be given in the end-product evaluation.
- 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.

Additional Information

Nameplate Markings are representatives for all models described in this report.

Limited testing was considered necessary due to testing under IEC 60950-1 CBTR report E139109-A144-CB-1, Certificate number CB-US-24655-UL.

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 CLC175US48 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)

Correction 1 ; added letter of Assurance and Rodney Reyes as tester.

This is a technical amendment. Based on a review of product technical documentation such as photos, schematics, and wiring diagrams, changes associated with this report are considered not to affect compliance with the requirements of the standard. Because of this and previously performed testing, no sample or additional testing was considered necessary. Changes and notes:

-Models and Ratings sections updated for clarity.
-Test Item Particulars: "ES1" removed.
-IT Power Systems evaluation added.
-Model differences section updated for clarity.
-Additional Information: Further information added about tests waived and performed.
-Technical Considerations: Altitude statement corrected from "70kPa" to "54kPa".
-Added A11:2017 to EN 62368 in additional standards.
-Conditions of Acceptability: Forced air cooling statement removed.
-Conditions of Acceptability: Corrected Class I bonding statement.
-Conditions of Acceptability: Added Class II creepage and clearance statement.
-Conditions of Acceptability: Neutral fusing statement updated for clarity.
-Clause 5.4.4: Evaluation corrected as TIW is used.
-Clause 5.6: Verdicts and comments updated for clarity.
-Clause 5.7: Comments updated for clarity.
-Clause 9: Verdicts and comments corrected.
-Clause F.3.5.3: Comment updated for accuracty and to specify marking location.
-Clause F.3.6: Comments updated for clarity.
-Table 5.4.2.2 and 5.4.2.3: Values corrected for evaluation to 62368-1.
-Table 5.4.2.2 and 5.4.2.3: Added footnote to explain locations without measurement.
-Table 5.4.9: Locations expanded to be more specific.
-Enclosures: Schematics removed from enclosures.
-Enclosures: Output Ratings document updated for visibility.

This is a technical amendment. Based on a review of product technical documentation such as photos, schematics, and wiring diagrams, changes associated with this report are considered not to affect compliance with the requirements of the standard. Because of this and previously performed testing, no sample or

Additional Standards

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

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)"
Fuses – replaceable by skilled person	(component ID:_____), Ratings (____A), "Ratings (____A, ____V)", and (symbol of required characteristics) located on or adjacent to fuse or fuseholder or in service manual.

Special Instructions to UL Representative

N/A

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
CHD250US series	-	-	Pri - Ground/ cover	1678	2500	1
BD1.2	Earthing Continuity Test Exemptions – This test is not required for the following models:					
	all					
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.					
	-					

BE1.0	Sample and Test Specifics for Follow-Up Tests at UL				
Model	Component	Material	Test	Sample (s)	Test Specifics
-	-	-	-	-	-