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) CSA C22.2 No. 62368-1-14, 2nd Ed., Issue Date: 2014-12-01 (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:	CCP550PSxx-y-zz-qqqqq Where xx can be 12, 15, 18, 24, 36, or 48 which represents rated output voltage, y can be blank or A for optional 5V Standby, zz can be blank or SF for single line fuse, qqqqq can be blank or any digits or letter for marketing purpose
Rating:	INPUT: 100-240Vac, 7.5A, 50/60Hz OUTPUTs: See Misc ID 7-01
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: Longjie Zhang / Project Handler Reviewed By: Lorenzo Iorio / 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 product is a component AC-DC power supply for building-in, open-framed, incorporating primary and secondary components.

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 and minor differences in the secondary circuit components and PWB layout.

CCP550PS12: 12Vdc (10.1 - 13.5 Vdc) , 25 A max, 300W max (50°C, convection)
CCP550PS15: 15Vdc (13.6 - 17 Vdc) , 20 A max, 300W max (50°C, convection)
CCP550PS18: 18Vdc (17.1 – 21 Vdc), 16.7 A max, 300W max (50°C, convection)
CCP550PS24: 24Vdc (21.1 - 26 Vdc), 12.5 A max, 300W max (50°C, convection)
CCP550PS36: 36Vdc (33.1 - 42 Vdc), 8.33 A max, 300W max (50°C, convection)
CCP550PS48: 48Vdc (42.1 - 52 Vdc), 6.25 A max, 300W max (50°C, convection)

CCP550PS12: 12Vdc (10.1 - 13.5 Vdc), 33.33 A max, 400W max (50°C, conduction)
CCP550PS15: 15Vdc (13.6 - 17 Vdc) , 26.67 A max, 400W max (50°C, conduction)
CCP550PS18: 18Vdc (17.1 – 21 Vdc), 22.23 A max, 400W max (50°C, conduction)
CCP550PS24: 24Vdc (21.1 - 26 Vdc), 16.67 A max, 400W max (50°C, conduction)
CCP550PS36: 36Vdc (33.1 - 42 Vdc), 11.1 A max, 400W max (50°C, conduction)
CCP550PS48: 48Vdc (42.1 - 52 Vdc), 8.33 A max, 400W max (50°C, conduction)

CCP550PS12: 12Vdc (10.1 - 13.5 Vdc), 45.8 A max, 550W max (50°C, forced-air with 20 cfm fan)
CCP550PS15: 15Vdc (13.6 - 17 Vdc) , 36.67 A max, 550W max (50°C, forced-air with 20 cfm fan)
CCP550PS18: 18Vdc (17.1 – 21 Vdc), 30.56 A max, 550W max (50°C, forced-air with 20 cfm fan)
CCP550PS24: 24Vdc (21.1 - 26 Vdc) , 22.9 A max, 550W max (50°C, forced-air with 20 cfm fan)
CCP550PS36: 36Vdc (33.1 - 42 Vdc) , 15.27 A max, 550W max (50°C, forced-air with 20 cfm fan)
CCP550PS48: 48Vdc (42.1 - 52 Vdc) , 11.45 A max, 550W max (50°C, forced-air with 20 cfm fan)

All models are provided with a Fan output (12 Vdc, 0.5A)

Additional Suffix “-A” denotes optional optional 5V Standby, rated at 1A convection or conduction cooled and 2A forced-air cooled.

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

Additional Suffix "-YYYYYY" can be any digits or letters or blank for marketing purpose.

All “-“ considered optional.

See Miscellaneous ID 7-02 for derating details.

Test Item Particulars	
Classification of use by	For building-in, to be classified in the end application
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	Class I
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer’s specified maximum operating ambient (°C)	See Model Differences section.
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)	0.23

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer’s specification of : 50C for full load, 70C see derating curve 7-02
- 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 equipment disconnect device is considered to be : To be determined in the end-product.
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- 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. 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, Earthing Continuity
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : T1 Primary-Secondary: 267Vrms/334Vpk, T2 Primary-Secondary: 271Vrms/567Vpk
- 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, shall be investigation in the end application.
- The following end-product enclosures are required : Mechanical, Fire, Electrical
- 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: Class F, T2: Class B
- The following components require special consideration during end-product Thermal (Heating) tests due to the indicated maximum temperature measurements during component-level testing : Transformer T1 (130°C), Transformer T2 (110°C)
- The maximum continuous power supply output (Watts) relied on forced air cooling from : 6 W fan (60x60mm) at 20 cfm (50mm space) applied to input side of PWB in horizontal orientation position, only for forced air cooling method.
- The power supply was evaluated to be used at altitudes up to : "5000 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.
- A suitable main disconnect device shall be provided in the end product.
- For all : 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 "Prospective Touch Voltage and 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 during component certification. Additional testing should not be needed if directly connected to mains e.g. using an appliance inlet, wiring terminals, etc.
- 5.6.4 - An investigation of the bonding conductors (traces) has not been conducted during the componennt-level investigation. Sutability of the bonding means shall be the subject of end product investigation, as necessary Spacings between bonding paths and primary ciruicts have been evaluated for BASIC insulation.

Additional Information

Marking Plate is representative of all models.

Test condition:
Forced air cool: with 60x60mm external fan (20 CFM) spaced 50 mm from input side of unit and inside a 200mm by 100mm enclosure. Unit is spaced 12mm from the side of enclosure and the fan is centered and spaced 20mm from the sides of the enclosure. Test performed with base of unit in horizontal position. (tested on bench)
Conduction Cooled (Horizontal); test performed in chamber with unit placed on top of heatsink rated 1°C/W in a horizontal position. Heatsink dimensions are 25 X 10 X 4 mm. The complete unit was placed inside a metal box, 40.5 X 30 X 30 mm by 0.3 mm thick
Conduction Cooled (Vertical); test performed in chamber with unit placed on top of heatsink rated 1°C/W in a horizontal position. Heatsink dimensions are 25 X 10 X 4 mm. The complete unit was placed inside a metal box, 40.5 X 30 X 30 mm by 0.3 mm thick

Technical Amendment 1: E317867-A6061-CB-1
- To remove GPI1 CoA 1.15, no tests were considered necessary.
Changes:
- GPI1 CoA, Cover Page, Testing Summary

Additional Standards

The product fulfills the requirements of: AS/NZS 62368.1:2018, EN 62368-1:2014+A11:2017, J62368-1 (2020), CSA/UL 62368-1:2014

Markings and Instructions

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listee's or Recognized companys name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number
Equipment rating marking – ratings	
Fuses – replaceable by skilled person	Fuses marked F1, F2 located on or adjacent to fuse.
DVK, F.3.5.3-Warning to service personnel	Only for models without suffix "SF". "CAUTION: Double pole, neutral fusing. Disconnect mains before servicing. "/"ATTENTION. Double pôle/fusible sur le neutre. Débrancher lalimentation avant lentretien."
F.3.5.3 Fuses -	Provided with an unambiguous cross reference to service documentation.

Special Instructions to UL Representative

Inspect the transformer(s) listed in production-line testing requirements per AA1.1- (C). When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in BD1.1 is conducted at the component manufacturer. The test record noted above shall be submitted to the manufacturer from transformer manufacturer. The test record can be in the form of a actual test record. A stamp or sticker on the transformer or other method verifying the routine test is being completed on 100% production is also acceptable.

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	Complete unit	--	Primary to Secondary	-	4000	1
All models	Complete unit	--	Primary to Chassis	-	2500	1
All models	-	-	T1 Primary to Secondary	-	4000	1
All models	-	-	T2 Primary to Secondary	-	4000	1
BD1.2	**Earthing Continuity Test Exemptions – This test is not required for the following models:**					
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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
-	-	-	-	-	-