

CERTIFICATE OF COMPLIANCE

Certificate Number 2023-08-28-E321744
Report Reference E321744-D1024-1/A0/C0-UL
Date 2023-08-28

Issued to: XP Power LLC
Applicant Company: 15641 Red Hill Ave, Suite 100
Tustin, CA 92780 USA

Listed Company: Same as Applicant

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

Medical Grade Power Supply

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 is blank, qqqqq can be blank or any digits or letter for marketing purpose

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.

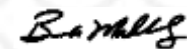
Standard(s) for Safety: ANSI/AAMI ES60601-1:2005/(R)2012 and A1:2012, C1:2009/(R)2012 and A2:2010/(R)2012, CSA CAN/CSA-C22.2 NO. 60601-1:14

Additional Standards: N/A

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 the UL Follow-Up Services Procedure provides authorization to apply the UL 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.



Bruce Mahrenholz, Director North American Certification Program

UL LLC

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Look for the UL Recognized Component Mark on the product.

B. Mahrenholz

Bruce Mahrenholz, Director North American Certification Program

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Description

UL TEST REPORT AND PROCEDURE

Standard:	ANSI/AAMI ES60601-1:2005/(R)2012 and A1:2012, C1:2009/(R)2012 and A2:2010/(R)2012, CSA CAN/CSA-C22.2 NO. 60601-1:14
Certification Type:	Component Recognition
CCN:	QQHM2 / QQHM8
Complementary CCNs:	
Product:	Medical Grade 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 is blank, qqqqq can be blank or any digits or letter for marketing purpose
Rating:	Input: All Models: 100-240 Vac, 7.5A, 50/60 Hz Output: See Output Ratings in GPI section
Applicant Name and Address:	XP Power LLC 15641 Red Hill Ave, Suite 100 Tustin, CA 92780, USA

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 as applicable.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared by: James Gochman, Project Handler
Reviewed by: Paul D. Evers, Project 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

To provide power to medical products

Refer to the Report Modifications page for any modifications made to this report.

Model Differences

All models in the Model CCP550PSXX Series are identical with exception to the Mains Transformer T1, and minor secondary components that allow for different output voltage ratings.

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), 16.67 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 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.

Additional Information

Technical Considerations

- The product was investigated to the following additional standards: N/A
- The following additional investigations were conducted: N/A
- The product was not investigated to the following standards or clauses:
 - IEC 60601-1-6 (The Usability evaluation has not been addressed)
 - Clause 4.3 (Essential Performance)
 - Clause 7.4 (Marking of Controls and Instruments)
 - Clause 7.9 (Accompanying Documents),
 - Clause 9 (ME Hazard),
 - Clause 10 (Radiation),
 - Clause 12.2 (Usability of ME Equipment)
 - Clause 14 (PEMS),
 - Clause 16 (ME Systems)
 - Risk Management was excluded from this investigation.
- The following accessories were investigated for use with the product: N/A
- Essential Performance was not considered, it is the responsibility of the end-product manufacturer to consider Essential Performance aspects of the component as it is applied in the end-equipment

The following tests were selected as representative of the test program applicable to model covered by this CBTR: Dielectric Voltage Withstand (4789675599); Dielectric Voltage Withstand and Temperature (4790011957); Temperature and Abnormal Operation and Single Fault Conditions (4789850489) and Humidity and Dielectric Voltage Withstand (4790918824). These tests have been witnessed for models selected as representative of the standard covered by this report and the applicable test program.

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:

- Risk Controls/ Engineering Considerations for component power supply:



For use only in or with complete equipment where the acceptability of the combination is determined by UL and/or the CB Testing Laboratory, when installed in an end-product, consideration must be given to the following:

1. End product Risk Management Process to include consideration of requirements specific to the Power Supply.
2. End product Risk Management Process to consider the need for simultaneous fault condition testing.
3. End product Risk Management Process to consider the need for different orientations of installation during testing.
4. Power Supply tested in 40°C, 93%RH. End product Risk Management Process to determine risk acceptability criteria.
5. End product to determine the acceptability of risk in conjunction to insulation to resistance to heat,

moisture, and dielectric strength.

6. End product to determine the acceptability of risk in conjunction to the movement of components as part of the power supply.
7. End product to determine the acceptability of risk in conjunction to the movement of conductors as part of the power supply.
8. End product to determine the acceptability of risk in conjunction to the routing of wires away from moving parts and sharp edges as part of the power supply.
9. Temperature Test was conducted without Test Corner. End product to determine the acceptability of risk in conjunction to temperature testing without test corner as part of the power supply.
10. End product to determine the acceptability of risk in conjunction to the Cleaning and Disinfection Methods as it pertains to the power supply.
11. End product to determine the acceptability of risk in conjunction to the Leakage of Liquids as it pertains to the power supply.
12. End product to determine the acceptability of risk in conjunction to the Arrangement of Indicators that are part of the power supply.
13. End product to determine the acceptability of risk in conjunction to the selection of components as it pertains to the intended use, essential performance, transport, storage conditions.
14. The power supply has not been determined suitable for use in the presence of a flammable anesthetics mixture with air or oxygen or with nitrous oxide. Note: Delete if not applicable
15. The output(s) circuits have been evaluated for BF applied part spacings and dielectrics only. Acceptability to be determined in end-product application.
16. The input/output connectors are not acceptable for field connections.
17. The power supply has been evaluated for use up to a max altitude 4000 meters.
18. The power supply provides the following Means of Protection:
 - 1 MOPP based upon a working voltage of 240 Vrms and 339 Vpk between Mains and Earth
 - 2 MOPP based upon a working voltage of 271 Vrms and 576 Vpk between Mains and Secondary
 - 2 MOPP based upon a working voltage of 48 Vdc between Secondary and Earth
 - 1 MOPP based upon a working voltage of 240 Vrms and 339 Vpk between Secondary and Earth
19. The dielectric strength test was conducted based on the peak working voltages and means of protection above.
20. Marking legibility (CI 7.1.2) and durability (CI 7.1.3) have not been evaluated.
21. Printed Wiring Board(s) in the power supply are rated a minimum of 130 Degrees C and a minimum flame rating of V-0
22. Transformer T1 employs a Class F (155 degrees C) Insulation System.
23. The power supply was evaluated as a Class I device.
24. When installed in a Class I end product, the power supply shall be reliably earthed (bonded) to the end-product's main protective earth.
25. Product provided with one fuse in each supply lead.
26. The power supplies covered in this report were tested on a 20 A branch circuit.
27. Testing was conducted with fuses rated 250 Vac, 8 A with a interrupt rating of 100A
28. Additional Overcurrent releases of adequate breaking capacity must be employed in the end product
29. The power supply was subjected to an elevated humidity test at 40°C, 93%RH for 48h
30. When convection cooling is being used, the power supply is rated for a maximum operating temperature of 50 degrees C at 300 W output load and a maximum operating temperature of 70 Degrees C and 150 W load
31. When conduction cooling is being used, the power supply is rated for a maximum operating temperature of 50 degrees C at 400 W output load and a maximum operating temperature of 70 Degrees C and 200 W load
32. When forced cooling is being used, the power supply is rated for a maximum operating temperature of 50 degrees C at 550 W output load and a maximum operating temperature of 70 Degrees C and 278 W load.
33. The unit was evaluated for forced cooling with a 60x60mm external fan (20 CFM) spaced 50 mm from input side and the airflow directed from input to output.
34. Thermistor TH1 has ratings of 240 Vac, max operating temp of 200 degrees C, max current of 8A and resistance of 75 mΩ at max current at 25 degrees C.
35. Protective devices (fuses) have an interrupt rating of 100A. The need for additional fusing with

higher interrupt rating shall be considered in the installation.

Markings and instructions	
Clause Title	Marking or Instruction Details
Company identification	Classified or Recognized company's name, Trade name, Trademark or File
Model	Model number
Serial number or lot or batch identifier	Serial number or lot or batch identifier
Supply Connection	Voltage range, ac/dc, phases if more than single phase
Alternating current	
Direct current	
Supply Frequency	Rated frequency range in hertz
Power Input	Amps, VA, or Watts
Output	Rated output voltage, power, frequency.

Special Instructions to UL Representative
N/A

Production-Line Testing Requirements			
Required	Test	Model/Part Exempt from Test	Additional Details
No	Grounding Continuity	--	--
Yes	Dielectric Voltage Withstand	None	--
No	Patient Circuit Dielectric Voltage Withstand	--	--
Solid-State Components			
The following solid-state components that can be disconnect from the remainder of the circuitry during either Dielectric Voltage Withstand Test:		Parts to be disconnected for test:	Specific Test:
		None	N/A
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		--	--
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Sample and Test Specifics for Follow-Up Tests at UL			
The following tests shall be conducted in accordance with the Generic Inspection Instructions			
Plastic Enclosure or Part	Test	Sample(s)	Test Specifics
None	NA	NA	NA
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