CERTIFICATE OF COMPLIANCE

Certificate Number	20150716-E317867
Report Reference	E317867-A88-UL
Issue Date	2015-JULY-16
Issued to:	XP POWER L L C 15641 RED HILL AVE, SUITE 100 TUSTIN CA 92780
This is to certify that representative samples of	COMPONENT - POWER SUPPLIES, INFORMATION TECHNOLOGY EQUIPMENT INCLUDING ELECTRICAL BUSINESS EQUIPMENT Power supply for building-in, switch mode type ECP130PSxx, where xx can be any number between 12 and 48, may be followed by additional suffixes denoting non-safety options
	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	UL 60950-1 and CAN/CSA C22.2 No. 60950-1-07 Information Technology Equipment - Safety - Part 1: General Requirements
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. The final acceptance of the component is dependent upon its installation and use in complete equipment submitted to UL LLC.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number	2015-8-14-E321744
Report Reference	E321744-D1006-1-ULCB
Issue Date	2015-8-14
Issued to:	XP Power LLC
Applicant Company:	15641 Red Hill Ave, Ste. 100 Tustin, CA 92780 USA
Listed Company:	Same as Applicant
This is to certify that representative samples of	Component power supply for building-in ECP130PSxx, where xx can be any number between 12 and 48, may be followed by additional suffixes denoting non-safety options. Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	ANSI/AAMI ES60601-1:2005/(R)2012, CSA CAN/CSA-C22.2 NO. 60601-1:14, IEC 60601-1 Edition 3.1 (2012)
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information.

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. The final acceptance of the component is dependent upon its installation and use in complete equipment submitted to UL LLC.

Look for the UL Certification Mark on the product.

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Bruce Mahrenholz, Assistant Chief Engineer, Global Inspection and Field Services, UL LLC
Joseph Hosey, General Manager, Director of Sales – Canada, UNDERWRITERS LABORATORIES OF CANADA INC.

Helena Y. Wolf, Director, Global Market Access Operations, UL LLC

Description

UL TEST REPORT AND PROCEDURE

Standard:	ANSI/AAMI ES60601-1:2005/(R)2012, CSA CAN/CSA-C22.2 NO. 60601-1:14, IEC 60601-1 Edition 3.1 (2012)
Certification Type:	Component Recognition
CCN:	QQHM2, QQHM8
Product:	Component power supply for building-in
Model:	ECP130PSxx, where xx can be any number between 12 and 48, may be followed by additional suffixes denoting non-safety options.
Rating:	Input: 100-240 Vac, 50/60 Hz, 1.3A Output: See Enclosure - Miscellaneous for max Power Output ratings
Applicant Name and Address:	XP Power LLC 15641 Red Hill Ave, Ste. 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: Melissa DeGuia Reviewed by: Timothy L. Gambrell

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 model covered in this report is a component power supply intended for use in Medical Electrical Equipment.
Refer to the Report Modifications page for any modifications made to this report.

Model Differences

All models in the Model ECP130PSXX series are identical with exception of the Mains Transformer, TR1, and secondary components/circuitry that allow for different output voltage ratings.
See Enclosure - Miscellaneous for max Power Output ratings based on model, forced air and ambient.

Additional Information

The clearance distances have additionally been assessed for suitability up to 5000 m elevation (1.48 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 power supply series covered by this report employ 2 Method of Protection of Insulation between Primary and Secondary circuits.
Licenses older than 3 years to be provided by the manufacturer upon request. The acceptability of CB certificates and/or licenses which are greater than 3 years old will be left to the discretion of the governing NCB.
Marking label is representative of all models.

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: Electromagnetic Compatibility (IEC 60601-1-2), Clause 14, Programmable Electronic Systems, Biocompatibility (ISO 10993-1)
- The following accessories were investigated for use with the product: None
- No Other Considerations.

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:

- Power supplies covered by this report were evaluated for both Class I and Class II (double insulated). Double insulated symbol is optionally provided. See Conditions of Acceptability for insulation required for Class II. Earthing symbol may only be provided for Class I power supplies.
-
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: Forced Air Cooling - 50°C at 100% of Output Rating, 70°C at 50% of Output Rating; Convectional Cooling: 50°C at 100W Output Rating, 70°C at

50W Output Rating, 80°C at 30W Output Rating. See Miscellaneous enclosure Power Output Table for additional information regarding power output and the various configurations.

- Printed Wiring Board rated 130°C.
- Clearance spacing evaluated for 5000 m altitude. Additional consideration maybe necessary in the end-use product
- Heating test should be repeated in the end-use product
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-Earthed Dead Metal: 240 Vrms, 340 Vpk and Primary-SELV: 240 Vrms, 340 Vpk
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- The maximum investigated branch circuit rating is: 20 A
- 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 supply will be considered Class II only when
- protection against electric shock does not rely on 1 Method of Protection of Insulation
- An investigation of the protective bonding terminals has: Not been conducted
- The following input terminals/connectors must be connected to the end-product supply neutral: CN1
- 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): L2, L3, L4 and TR1 (Class F, 155°C)
- The following end-product enclosures are required: Mechanical, Fire, Electrical
- The equipment is suitable for direct connection to: AC mains supply. Means of connection will need to be evaluated in the end product.
- Repeat of leakage current testing and consideration of non-frequency weighted leakage test shall be considered in the end product application.
- This power supply has been evaluated as a continuous operation, ordinary equipment and has not been evaluated for use in the presence of a flammable anesthetic mixture with air, oxygen, or nitrous oxide. The
- output circuits have not been evaluated for direct patient connection (Type B, BF or CF).
- The end product shall ensure that the requirements related to accompanying documents, clause 7.9, are met.
- The need for Marking Durability and Marking Legibility Testing shall be considered as part of the end product installation.
- The suitability of the breaking capacity of the fuse per Clause 8.11.5 shall be verified in the end product.

-
- Models provided with suffix SF only provided with one line side fuse. Consideration should be made in the end-use product to determine the need of double pole fusing

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
Date of manufacture or use by date	Date of manufacture or use by date
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
None

Production-Line Testing Requirements		
Test Exemptions - The following models are exempt from the indicated test		
Test	Exemption Specifics	Details
Grounding Continuity	The following models are exempt from the indicated test:	Exempt
Dielectric Voltage Withstand	The following models are exempt from the indicated test:	Not exempt
Patient Circuit Dielectric Voltage Withstand	The following models are exempt from the indicated test:	Exempt
Solid-State Components	The following solid-state components may be disconnected from the remainder of the circuitry during either Dielectric Voltage Withstand Test:	Exempt

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

TABLE: List of Critical Components

8.10	TABLE: List of critical components				Pass
Component/ Part No.	Manufacturer/ Trademark	Type No./model No./	Technical data	Standard No./ Edition [2]	Mark(s) & Certificates of conformity [1]
Primary Connector (CN1)	Long Chu Electronics co., ltd.	P101	Rated 7A, 250V, min. 85°C (Internal Connection only).	UL1977, CSAC22.2NO 182.3-M1987 (ECBT2/E94662)	UL, CSA
Secondary Connector (CN2)(SELV)	Long Chu Electronics co., ltd.	P101	Rated min. 12A, min. 48V, min. 85°C	UL1977, CSAC22.2NO 182.3-M1987 (ECBT2/E94662)	UL, CSA
Secondary Connector (CN2)(SELV) - Alternate	Interchangeable	Interchangeable	Rated min. 12A, min. 48V, min. 85°C	UL1977, CSAC22.2NO 182.3-M1987	UL ,cSA
Fuses (F1, F2)	Save Fusetech Inc. (Cooper Bussmann)	SS-5 Series	Rated T3.15A, 250 V, 105°C, soldered to PWB. Non-operator accessible.	UL248, CSAC22.2 No.248.14, IEC60127-2 (JDYX2/8/ E306920)	UL, cUL
Fuse (F2) – Alternate - For Models with Suffix "SF"	-	-	Not Provided. Trace continued where Fuse (F2) would normally be provided.	-	-
Thermistor (TH1)	Thinking Electronic Industrial Co., Ltd.	SCK type	NTC. Rated 240 V, 150°C, 1.5 ohm, Imax. 5 A (Not relied upon for safety).	XGPU2/8 (E138827)	UL, cUL
Thermistor (TH1) - Alternate	Interchangeable	Interchangeable	NTC. Rated 240 V, 150°C, 1.5 ohm, Imax. 5 A (Not relied upon for safety).	-	-
Bridge Diodes (BD1)	Interchangeable	Interchangeable	Rated Rev. voltage (rms) 600 V, min. 15 A, 150°C.	-	-
X-Capacitors (CX1)	Carli Electronics Co., Ltd.	MPX Series	Rated max. 0.47uF, min. 250 V, min. 100°C, marked "X2".	UL60384-14,CSA C22.2 No.1, IEC60384-14 (FOWX2,-8 /E120045)	UL, cUL ,VDE (Lic. No. 40008520)
Y-Capacitors (CY7, CY8) - Optional	TDK Corp	CS or CD Series	Rated max. 2200 pF, min. 250 Vac, min. 85°C, marked “Y1” or "Y2".	UL60384-14,CSA C22.2 No.1, IEC60384-14 (FOWX2/E37861)	UL, CSA VDE (Lic. No. 40017931)
Y-Capacitors (CY9) - Optional	TDK Corp	CS or CD Series	Rated max. 1000 pF, min. 250 Vac, min. 85°C, marked “Y1” or "Y2".	UL60384-14,CSA C22.2 No.1, IEC60384-14 (FOWX2/E37861)	UL, CSA , VDE (Lic. No. 40017931)
Electrolytic Capacitor (C2) (PRI)	Interchangeable	Interchangeable	Rated 82uF, 400 V min., 105°C. Provided with integral pressure relief.	-	-
Transistor (Q1) (PRI)	Interchangeable	Interchangeable	Rated 500 V, 10A, 150°C.	-	-
Transistors (Q2, Q3) (PRI)	Interchangeable	Interchangeable	Rated 500 V, 10A, 150°C.	-	-
Inductor (L2)	Interchangeable	Interchangeable	Toroidal. Core: Approx. Coil: (OBMW2), Magnet	-	-

8.10	TABLE: List of critical components				Pass
Component/ Part No.	Manufacturer/ Trademark	Type No./model No./	Technical data	Standard No./ Edition [2]	Mark(s) & Certificates of conformity [1]
			wire, rated min. 130°C.		
Inductor (L3)	Interchangeable	Interchangeable	Toroidal. Core: Approx. Coil: (OBMW2), Magnet wire, rated min. 130°C.	-	-
Inductor (L4)	Interchangeable	Interchangeable	Open-type Overall Core: Ferrite. Bobbin: Plastics	-	-
Inductor (L4) - Insulation System - Insulating Tape	3M	1351F-1	Rated 130°C.	UL 510 (OANZ2/E17385)	UL
Inductor (L4) - Insulation System - Insulating Tape - Alternate	CHYUN YIHYAHUA	P2XXFCT	Rated 130°C.	UL 510 (OANZ2/E81174)	UL
Transformer (TR1)	Interchangeable	Interchangeable	Open-type. Core: Approx. Provided with a Class B insulation system, see below for details.	-	-
Transformer (TR1) - Insulation System	Ain Hsin Electronics	SBI4.2	Class B. Rated 130°C	UL 1446 (OBJY2/E210140)	UL
Transformer (TR1) - Bobbin	Sumitomo Bakelite Co., Ltd.	PM-9630	Rated V-0, min. 0.71 mm thick, 150°C.	UL 746 (QMFZ2/E41429)	UL
Transformer (TR1) - Triple Insulating Wire	Totoku	TIW-2LZX (TIW-2LZ)	Reinforced Insulation. Rated 130°C (Tested for a Twisted Pair Dielectric Strength Test Value = 8kV)	UL 2353 (OBJT2/E166483)	UL
Transformer (TR1) - Insulating Tape	3M, YAHUA	1350F-1(b),CT*	Rated 130°C (Tape is not relied upon for DI/RI insulation)	UL 510 (OANZ2/E17385,E165111)	UL
Transformer (TR1) - Tubing	Great Holding Industrial Co. LTD.	TFL	Rated 200°C max, 150 V max, VW-1	UL 224 (YDPU2/E156256)	UL
Optical Isolators (IC3, IC4)	Vishay	VOL618A Series	Isolation voltage 5000 V. (DTI min. 0.4mm)	UL1577, IEC607047-5-5,VDE 0884 (FPQU2,-8/E76222)	UL, cUL, VDE (Lic. No 132473)
PWB	Interchangeable	Interchangeable	Overall Rated min. V-0, 130°C, rated for direct support of live parts.	UL 94 (ZPMV2)	UL
Optical Isolators (IC3, IC4) - Alternate	RENESAS	PS2381-1	Isolation voltage 5000 V. (DTI min. 0.4mm)	UL1577, IEC607047-5-2,VDE 0884 (FPQU2,-8/E72422)	UL, cUL, VDE (Lic. No. 40028917)
Optical Isolators (IC3, IC4) - Alternate	TOSHIBA	TLP385	Isolation voltage 5000 V. (DTI min. 0.4mm)	UL1577, IEC607047-5-2,VDE 0884 (FPQU2,-8/E67349)	UL, cUL, VDE (Lic. No. 40040216)

Supplementary information:

The (CB) Test Laboratory has verified the component information.

1) An asterisk indicates a mark which assures the agreed level of surveillance. See Licenses and Certificates of Conformity for verification.

2) Identify the UL Product Category CCN(s)/File Number in brackets "()" if component is a UL Certified component and this report includes a UL Certification. This is useful for the UL Follow-Up Service Inspection associated with the UL Mark.

---------- END OF APPENDIX C ----------