

**Description****UL TEST REPORT AND PROCEDURE**

<b>Standard:</b>	AAMI ES60601-1:2005,ES60601-1:2005/AMD1 1:2012 , ES60601-1:2005/AMD2:2021, CAN/CSA-C22.2 No. 60601-1:08, CAN/CSA-C22.2 No. 60601-1:14 (including amendment 1) and Amendment 2:2022 (MOD) to CAN/CSA-C22.2 No. 60601-1:14
<b>Certification Type:</b>	Component Recognition
<b>CCN:</b>	QQHM2 / QQHM8
<b>Complementary CCNs:</b>	QQHM2/ QQHM8
<b>Product:</b>	Build in power supply
<b>Model:</b>	ECS130USxx-yy (where xx can be any number between 12 and 48 designating the output voltage, yy can be blank, C, or SF). Models with suffix SF designate single fuse
<b>Rating:</b>	ECS130US15-XA1013 Input Rated: 100-240 V~,50/60 Hz, 3A Output Rated: See Enclosure - Miscellaneous Table of Output Ratings for maximum output details.
<b>Applicant Name and Address:</b>	XP Power LLC 340 Commerce, Suite 100,  Irvine, CA 92602, 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.

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Handler

Reviewed by: James Gochman / 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

Products covered are open frame power supplies intended for building-in to be used with Medical Electrical Equipment. Units are intended for used with Class I end-products.

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

### Model Differences

All models in the Model ECS130USxx-yy series are identical with exception to the Mains Transformer, T1, and minor secondary components that allow for different output voltage ratings. Models with suffix C is provided with metal cover for Class I use only. See Enclosure Miscellaneous 1a for Output Rating Table ECS130US15-XA1013 is identical to Model ECS130US15, except for the size of the PWB mounting holes.

### Additional Information

Marking Plate is considered representative of all models covered under this Report.

The clearance distances have additionally been assessed for suitability up to 5000 m elevation.

When submitting this Test Report to other Certification Body, the manufacturer is responsible for providing any additional information that the Body may need in order to issue its Mark, including testing for compliance with the applicable collateral standards.

Manufacturer to provide up to date IEC Licenses for component licenses greater than 3 years upon request.

#### 4.11 Power input

##### 13.2.2.7 Impairment of Cooling

Above listed test has been witnessed for models selected as representative of the product family covered by this report and of the applicable test program (4791129382).

### Technical Considerations

- The product was investigated to the following additional standards: EN 60601-1:2006/2006+A12:2014+A1:2013+A2:2021
  - The following additional investigations were conducted: None
  - The product was not investigated to the following standards or clauses: Biocompatibility, PESS, EMC, Annex Z of EN standards for compliance with the MDD, Usability
  - The following accessories were investigated for use with the product: None
  - Scope of Power Supply evaluation defers the following clauses to be determined as part of the end product: Clause 7.5 (Safety Signs), Clause 7.9 (Accompanying Documents), Clause 9 (ME Hazard), Clause 10 (Radiation), Clause 14 (PEMS), Clause 16 (ME Systems)
- The product is evaluated only to the following hazards: Casualty, Fire, Shock  
 The degree of protection against harmful ingress of water is: Ordinary  
 Software is relied upon for meeting safety requirements related to mechanical, fire and shock: No  
 The unit has two cooling conditions: 1) External Forced Air Cooling: 10CFM air flow, 1 inch distance from Fan to input side of the unit with inward air-flow direction; 2) Convection cooling. See Misc

Enclosure Table of Output Ratings for additional details.  
Unit may be used with or without metal cover.

### 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 component shall be considered for compliance with the Marking (clause 7) and Separation (clause 8) requirements as part of the end use application evaluation. Repeat of leakage current testing and consideration of non-frequency weighted leakage current test (Clause 8.7.3e) shall be considered in the end product application.

Consideration should be given to measuring the temperature on power electronic components and transformer windings when the power supply is installed in the end-use equipment. The end use product shall ensure that the power supply is used within its ratings.

This power supply was evaluated with Two MOPP between primary and secondary; One MOPP primary and Earth; One MOPP between secondary and Earth for Class I 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 available voltage for the secondary outputs does not exceed 25 Vac or 60 Vdc, under normal and single fault conditions.

The following secondary output circuits are at non-hazardous energy levels: All outputs

The input/output connectors are not acceptable for field connections; they are only intended for connection to mating connectors of the end-use equipment.

The maximum investigated branch circuit rating is: 20 A

The Electric Strength Test conducted on this power supply was based upon a maximum working voltage of: Primary-Earthed Dead Metal (Class I units): 356 Vpk, 245 Vrms; Primary-SEC: 603 Vpk, 240 Vrms.

When installed in a Class I end product, the power supply shall be mounted in a manner that provides, at a minimum, 3.2 mm Clearance/4 mm Creepage between the primary sides of power supply and protectively earthed accessible conductive parts. In addition, when installed in a Class I end product, the protective bonding terminal of the power supply shall be reliably connected to the main protective earthing terminal of the end product.

Proper bonding to the end-product main protective earthing termination is required. Grounding continuity shall be conducted in the end product.

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 (130W) with forced air cooling, derated to 50% load (65W) with forced air cooling at 70°C (applicable to all models); 50°C for 77% load (100W) with convection cooling, derated to 39% (50W) with convection cooling at 70°C (applicable to models without cover); 50°C for 58% load (75W) with convection cooling, derated to 29% (38W) with convection cooling at 70°C (applicable to models with cover). See Enclosure Miscellaneous 1a for additional details.

A single input current rating is provided over the entire 100-240Vac voltage range. The end product evaluation is to determine the acceptability.

Primary side heat sinks are floating and considered live. They should not be accessible in the end product.

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): L1, L2 and T1 are Class F, 155°C

Printed Wiring Board rated 130°C.

Cleaning test shall be considered as part of end product evaluation.

The need for Marking Durability and Marking Legibility Testing shall be considered as part of the end product installation.

Fire/ Mechanical/ Electrical Enclosure to be provided as part of the end product.

Unit provided with additional suffix "-SF" are provided with only one fuse in the line side.

Consideration for the need for additional fusing to be provided as part of the end product

Units with suffix "C" provided with metal cover.