

## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	UL 62368-1, 3rd Ed, 2021-10-22 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1:19, 3rd Ed, 2021-10-22 (Audio/video, information and communication technology equipment Part 1: Safety requirements)
<b>Certification Type:</b>	Component Recognition
<b>CCN:</b>	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
<b>Complementary CCN:</b>	N/A
<b>Product:</b>	AC-DC Power Supply
<b>Model:</b>	EHL05US03, EHL05US05, EHL05US09, EHL05US12, EHL05US15, EHL05US24, EHL05US48, EHL05US03-P, EHL05US05-P, EHL05US09-P, EHL05US12-P, EHL05US15-P, EHL05US24-P, EHL05US48-P
<b>Rating:</b>	Input: 100-480VAC, 0.2A, 50/60Hz Output: EHL05US03, EHL05US03-P: 3.3VDC, 1.52A EHL05US05, EHL05US05-P: 5VDC, 1A EHL05US09, EHL05US09-P: 9VDC, 0.56A EHL05US12, EHL05US12-P: 12VDC, 0.42A EHL05US15, EHL05US15-P: 15VDC, 0.33A EHL05US24, EHL05US24-P: 24VDC, 0.21A EHL05US48, EHL05US48-P: 48VDC, 0.105A
<b>Applicant Name and Address:</b>	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.

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Reviewed By: Lorenzo Iorio / 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

The EHL05 series is a building-in switching mode power supply intended for use as sub-assembly part of a system. The switching mode power supply is to be used in information technology equipment.

### Model Differences

All models are identical with exception to the mains transformer T1, and minor secondary components that allow for different output voltage ratings. The models name without suffix "-P" are models that are encapsulated filling with potting compound.

### Test Item Particulars

Product group	built-in component
Classification of use by	Skilled person
Supply Connection	AC Mains
Supply tolerance	+10%/-10%
Supply connection – type	Directly soldered to PCB, to be considered in the end product
Considered current rating of protective device	N/A
Equipment mobility	for building-in
Over voltage category (OVC)	OVC III
Class of equipment	Class II
Special installation location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified Tma (°C)	See General product information for more details
IP protection class	IPX0
Power systems	TN
Altitude during operation (m)	4000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	0.23 (Un-potted), 0.65 (Potted)

### Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : See General product information for more details
- The product is intended for use on the following power systems : TN

- Mains supply tolerance (%) or absolute mains supply : +10%/-10%
- The power supply series covered by this report employ Double/Reinforced Insulation between Primary and Secondary circuits.
- External overcurrent protective devices (glass fuse, rated 2A, 600V~) were connected in the supply line during the single fault test as supplied by XP Power Limited. The instruction for the external fuse information is provided in the product spec.
- Transformer core is considered as primary part. Triple insulation wire is used as secondary winding.
- The products have been evaluated as Class II devices. If any pins and/or components in the primary side are connected to earth in a Class I end product, spacing between the primary and earth and ground bonding test are to be evaluated in the end product.

### 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 end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary-Secondary: 382Vrms / 635Vpk
- The following output circuits are at ES1 energy levels : Output of all models
- The following output circuits are at PS3 energy levels : Output of all models
- The investigated Pollution Degree is : 2
- The following end-product enclosures are required : Electrical, Mechanical, Fire
- The power supply was evaluated to be used at altitudes up to : 4000 m
- Accessibility of Live parts is to be evaluated at the end-product enclosure.
- Stability and Securement of power supplies are to be evaluated at end-product.
- These power supplies need to be evaluated for mechanical strength and testing in the end product.
- Temperature test, abnormal temperature test needs to be repeated in the end product evaluation.
- Spacing of the product to its mounting and surrounding are to be evaluated when installed in the end product.
- Capacitor discharge is to be evaluated in the end product.
- These power supplies are not cord connected with plug attachment. Products pins are not for insertion into socket-outlets.
- These power supplies are considered as components and built-in appliance. Instructions for safe-use and built-in requirements are to be evaluated in the end product.
- The equipment suitability for connection to AC Mains shall be determined in the end product.
- These power supplies need to be re-evaluated for touch current in the end product.
- G.8.2.2 varistor overload test wasn't conducted in this evaluation and shall be considered in the end product if input rating is higher than 240Vac in the end application.

### Additional Information

The maximum operating ambient temperature is specified by the manufacturer as following:

- i) 45°C (Full Load) and 80°C (60% Load) for models EHL05US03 & EHL05US05,
- ii) 45°C (Full Load) and 70°C (60% Load) for models EHL05US03-P & EHL05US05-P,
- iii) 60°C (Full Load) and 80°C (60% Load) for models EHL05US09, EHL05US12, EHL05US15, EHL05US24 & EHL05US48,
- iv) 60°C (Full Load) and 75°C (60% Load) for models EHL05US09-P, EHL05US12-P, EHL05US15-P, EHL05US24-P, EHL05US48-P

The dimension of the encapsulated power supply is 52.4 mm (L) x 27.2 mm (W) x 23.0 mm (H).

The dimension of the open frame power supply is 49.3 mm (L) x 25.0 mm (W) x 22.4 mm (H).

External overcurrent protective devices (glass fuse, rated 2A, 600V~) were connected in the supply line during the single fault test as supplied by XP Power Limited. The instruction for the external fuse information is provided in the datasheet.

Unless otherwise specified, Models EHL05US03, EHL05US48, EHL05US03-P and EHL05US48-P were chosen to perform tests and are considered representatives of other models.

Classification of protection class of the open frame models (EHL05USXX) power supply is to be considered in the end product evaluation.

The necessary additional tests shall be determined and evaluated in the end product investigation.

**Additional Standards**

The product fulfills the requirements of: N/A

**Markings and Instructions**

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listee’s or Recognized Company’s 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)

**Special Instructions to UL Representative**

N/A

<b>BD1.0</b>						
<b>TABLE: Production-Line Testing Requirements</b>						
<b>BD1.1</b>						
<b>Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.</b>						
Model	Component	Removable parts	Test probe location	Test V rms	Test V dc	Test Time, s
All models	Transformer T1	--	Primary and Secondary Pins	3000Vac	4200Vdc	1 sec
<b>BD1.2</b>						
<b>Earthing Continuity Test Exemptions – This test is not required for the following models:</b>						
All models						
<b>BD1.3</b>						
<b>Electric Strength Test Exemptions – This test is not required for the following models:</b>						
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<b>BD1.4</b>						
<b>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.</b>						
N/A						

<b>BE1.0</b>					
<b>Sample and Test Specifics for Follow-Up Tests at UL</b>					
Model	Component	Material	Test	Sample (s)	Test Specifics
N/A	--	--	--	--	--