

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) CAN/CSA C22.2 No. 62368-1-14, 2nd Ed-(Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Listing
CCN:	QQJQ, QQJQ7 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	Power Rack
Model:	GFR1K5RACK-0X Where X is between 1-9.
Rating:	UL ONLY: INPUT: 100-240VAC 50/60Hz, 15A MAX PER SLOT INPUT: 100-240VAC 50/60Hz, 10A MAX PER SLOT Output Ratings: See Model Differences section for details.
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: Adam Tangocci / Project Handler Reviewed By: Gregory Ray / 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

These units are Stationary Pluggable Equipment Type A for use in Restricted Access Location with simultaneous multiple connections to provide with a separate additional protective earthing terminal. The units are Power Racks that accommodates 4 power supplies. An appliance inlet is provided for each power supply input with the DC Outputs for each of the power supplies combined in parallel through DC Output Busbars.

Model Differences

All models are identical with exception to the number different output bus bars provided, the output rating marking, and the number of secondary connectors provided, see model guide below.

Model GFR1K5RACK-0X

Options for suffix 0X:

- 01: Single output, 5V stdby, Analog signal (9 pins), Digital signal (25 pins)
- 03: Single output, POE option, Analog signal (9 pins)
- 04: Dual output, Analog signal and Digital signal (44 pins)
- 05: Single output, 5V stdby, Analog signal (9 pins), Volt free contact
- 06: Single output, 5V stdby, Analog signal (9 pins), Digital signal (25 pins) Class A
- 07: Single output, POE option, Analog signal (9 pins) Class A
- 08: Dual output, Analog signal and Digital signal (44 pins) Class A
- 09: Single output, 5V stdby, Analog signal (9 pins), Volt free contact Class A

Output Ratings:

Single Output for 50°C:

12-56 Vdc, 400A, 6000W max.

Single Output for 60°C:

12-56 Vdc, 300A, 4500W max.

Single Output for 70°C:

12-56 Vdc, 200A, 3000W max.

Dual Output for 50°C:

12-56 Vdc, 200A per Output, 3000W max per Output.

Dual Output for 60°C:

12-56 Vdc, 150A per Output, 2250W max per Output.

Dual Output for 70°C:

12-56 Vdc, 100A per Output, 1500W max per Output.

Test Item Particulars

Classification of use by	Skilled person
Supply Connection	AC Mains
Supply % Tolerance	+10%/-10%
Supply Connection – Type	pluggable equipment type A - appliance coupler
Considered current rating of protective device as part of building or equipment installation	20 A; building;
Equipment mobility	rack-mounting
Over voltage category (OVC)	OVC II
Class of equipment	Class I
Access location	restricted access area
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)	3048 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	5.5

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of : 50°C (Output loaded to 50% of Full-rating at 70°C, see Model Differences section for details)
- 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 : Appliance inlet
- The following were investigated as part of the protective earthing/bonding : Earthing pin of connectors were evaluated for Protective Earthing.
- 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 1.15 for operating at an altitude of 3048 meters. If the calculated Clearance exceeded the Creepage, the Creepage was adjusted to the value of clearance.
- The power supply in this equipment was evaluated as part of a separate investigation. A test report for the power supply may be required when submitting this CB Report to a National Certification Body (NCB) to obtain a national mark.
- IEC 62368-1. Additionally evaluated to EN 62368-1:2014+A11:2017; National Differences specified in the CB Test Report.

Additional Information

Marking Plate is representative of all models.

This report is based on a previous evaluation to IEC 60950-1:2005 (2nd Ed.), Am1:2009 + Am2:2013 under CBTR Ref. No. E139109-A30-CB-3 including Amendments, CBTC Ref. No. US-25907-UL. Based on the previously conducted performance testing, only the tests conducted as part of this investigation were considered necessary.

The following tests were conducted under CTDTP SMT/CTF Stage 3 to IEC 60950-1 E2+A1+A2 at XP POWER LLC, 15641 RED HILL AVE, SUITE 100, TUSTIN, CA 92780, USA:

Input: Single-Phase (1.6.2)

Capacitance Discharge (2.1.1.7)

SELV Reliability Test Including Hazardous Voltage Measurements (2.2.2, 2.2.3, 2.2.4, Part 22 6.1)

Humidity (2.9.1, 2.9.2, 5.2.2)

Determination of Working Voltage; Working Voltage Measurement (2.10.2)

Distance Through Insulation Measurements (2.10.5)

Heating (4.5.1, 1.4.12, 1.4.13)

Electric Strength (5.2.2)

Component Failure (5.3.1, 5.3.4, 5.3.7)

Abnormal Operation (5.3.1 - 5.3.9)

Power Supply Output Short-Circuit/Overload (5.3.7)

The following additional tests were conducted on a sample of model GFR1K5RACK in accordance with IEC 62368-1:2014 (Second Edition) at XP POWER LLC, 15641 RED HILL AVE, SUITE 100, TUSTIN, CA 92780 USA:

Electric Strength Test (5.4.9)

Prospective Touch Voltage and Touch Current Measurement (5.7)

UL Service Request 5102198: This is a technical amendment. Because previously conducted testing was determined to be inadequate, additional testing was considered necessary. The product continues to comply with the requirements of the standard. Based on a review of product technical documentation such as photos, schematics, and wiring diagrams, changes associated with this report are considered not to affect compliance with the requirements of the standard. Changes and notes:

- CBTL updated from "Camas WA" to "Vancouver WA".
- Input ratings and marking plate updated to remove "Max 12A per cord" statement.
- Model Differences: Output ratings updated for clarity.
- Technical Considerations: Altitude statement corrected.
- Clause 4.4.4.4, Annex T.6, and Table T.6: Impact test performed and evaluated.
- Clause 5.4.3.3: Comment corrected.
- Table 4.1.2: Appliance inlet current rating updated to 10A for CB.
- Table 4.1.2: Additional information about testing added to labels.
- Table 5.2: Additional applicable data added from original 60950-1 evaluation.
- Table B.2.6: Test data performed at incorrect loading condition removed. Test data with correct loading condition was already present.
- Table 5.4.9: Locations expanded to be more specific.
- Table B.2.5: "Hz" column added to Input Test Table.
- Table B.2.5: Test data removed at incorrect output conditions.
- Table B.2.5: Additional applicable data added from original 60590-1 evaluation.
- Table B.2.5: Input current rating corrected to 10A for CB and 15A for UL.
- Table B.2.5: Additional testing performed at correct output conditions.
- Table B.4: Comments expanded for clarity.

UL Service Request 5233038: This is a technical amendment. Based on a review of product technical documentation such as photos, schematics, and wiring diagrams, changes associated with this report are considered not to affect compliance with the requirements of the standard. Because of this and previously performed testing, no sample or additional testing was considered necessary. Changes and notes:
 -UL Only: Changes made to the CB Test Report as part of UL Service Request 5102198 (as described above) were made in the UL report.

- Ratings: Split input ratings for UL and CB and added max rated input current per slot.
- CB Only: Updated marking plate with split input ratings for UL and CB and max rated input current per slot.
- UL Only: Marking and Instructions: Neutral fusing marking requirement removed as fuses are not replaceable.
- Clause F.3.5.3: Comment added.
- Table 4.1.2: Corrected component power supply input current rating.
- Table B.2.5: Reformatted for clarity and input currents corrected.
- CB Only: Japan National Differences evaluated.
- Clause 1.1 (US/CAN ND): Comment added.
- CB Only: Enclosures: CB Test Certificate for component power supplies updated.

Additional Standards

The product fulfills the requirements of: EN 62368-1:2014 + A11:2017

Markings and Instructions

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listees or Recognized companys 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

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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
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BD1.2	Earthing Continuity Test Exemptions – This test is not required for the following models:					
	All models exempt.					
BD1.3	Electric Strength Test Exemptions – This test is not required for the following models:					
	All models exempt.					
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