Test Report issued under the responsibility of:

# TEST REPORT
## IEC 62368-1
## Audio/video, information and communication technology equipment
## Part 1: Safety requirements

| | |
|---|---|
| **Report Number .....:** | E317867-A6026-CB-1 |
| Date of issue.....: | 2018-12-14 |
| Total number of pages .....: | 93 |
| **Applicant's name.....:** | **XP POWER L L C** |
| Address .....: | **15641 RED HILL AVE, SUITE 100**<br>**TUSTIN CA 92780**<br>**UNITED STATES** |
| Name of Test Laboratory preparing the Report .....: | UL Camas<br>2600 N.W. Lake Road, Camas, WA, 98607, USA |
| **Test specification:** | |
| Standard .....: | IEC 62368-1:2014 (Second Edition) |
| Test procedure .....: | CB Scheme |
| Non-standard test method.....: | N/A |
| **Test Report Form No.....:** | IEC62368_1B |
| Test Report Form(s) Originator .....: | UL(US) |
| Master TRF.....: | 2014-03 |

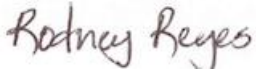
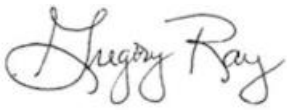


**This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.**

**General disclaimer:**

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory.
The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

| | |
|---|---|
| Test Item description : | Switching Power Supply |
| Trade Mark .....: | None |
| Manufacturer .....: | XP POWER L L C<br>15641 RED HILL AVE, SUITE 100<br>TUSTIN CA 92780<br>UNITED STATES |
| Model/Type reference .....: | VFT150PSXX<br><br>Where XX is 05, 12, 15, 24, or 48. |
| Ratings .....: | INPUT : 100-240~2.5A 50/60Hz<br><br>Output:<br>Model Name (force cooling)<br>VFT150PS05: 5 Vdc, 24 A<br>VFT150PS12: 12 Vdc, 12.50 A<br>VFT150PS15: 15 Vdc, 10 A<br>VFT150PS24: 24 Vdc, 6.25 A<br>VFT150PS48: 48 Vdc, 3.13 A<br><br>Model Name (convection cooling)<br>VFT150PS05: 5 Vdc, 16 A<br>VFT150PS12: 12 Vdc, 8.3 A<br>VFT150PS15: 15 Vdc, 6.7 A<br>VFT150PS24: 24 Vdc, 4.2 A<br>VFT150PS48: 48 Vdc, 2.1 A |
| | |
| Testing procedure and testing location: | |
| ☐ CB Testing Laboratory: | |
| Testing location/ address .....: | |
| ☐ Associated CB Testing Laboratory: | |
| Testing location/ address.....: | |
| Tested by (name + signature).....: | |
| Approved by (name + signature) .....: | |
| | |
| ☐ Testing procedure: TMP/CTF Stage 1 | |
| Testing location/ address..... : | |
| Tested by (name + signature).....: | |
| Approved by (name + signature) .....: | |
| | |
| ☐ Testing procedure: WMT/CTF Stage 2 | |

| | | |
|---|---|---|
| Testing location/ address..... : | | |
| Tested by (name + signature).....: | | |
| Witnessed by (name + signature).....: | | |
| Approved by (name + signature) .....: | | |
| | | |
| ☒ Testing procedure: SMT/CTF Stage 3 or 4 | | |
| Testing location/ address..... : | XP POWER LLC, 15641 RED HILL AVE, SUITE 100, TUSTIN , CA 92780, USA | |
| Tested by (name + signature).....: | Rodney Reyes / Tester |  |
| Approved by (name + signature) .....: | Gregory Ray / Reviewer |  |
| Supervised by (name + signature) .....: | Adam Tangocci / Supervisor |  |

**List of Attachments (including a total number of pages in each attachment):**

National Differences (23 pages)
Enclosures (64 pages)

**Summary of testing:**

Unless otherwise indicated, all tests were conducted at XP POWER LLC, 15641 RED HILL AVE, SUITE 100, TUSTIN , CA 92780, USA.

| **Tests performed (name of test and test clause):** | **Testing location:** |
|---|---|
| ELECTRIC STRENGTH TEST (5.4.9)<br>SAFEGUARDS AGAINST CAPACITOR DISCHARGE AFTER DISCONNECTION OF A CONNECTOR (5.5.2.2)<br>PROSPECTIVE TOUCH VOLTAGE AND TOUCH CURRENT MEASUREMENT (5.7) | XP POWER LLC, 15641 RED HILL AVE, SUITE 100, TUSTIN , CA 92780, USA |

**Summary of compliance with National Differences:**

**List of countries addressed:** AU,NZ, EU Group Differences, US,CA

☒ **The product fulfils the requirements of:** EN 62368-1:2014 + A11:2017

**Copy of Marking Plate** - Refer to Enclosure titled Marking Plate for copy.

| **TEST ITEM PARTICULARS:** | |
|---|---|
| Classification of use by | Ordinary person |
| Supply Connection | AC Mains |
| Supply % Tolerance | +10%/-10% |
| Supply Connection – Type | For building-in |
| Considered current rating of protective device as part of building or equipment installation | 20 A;<br>building; |
| Equipment mobility | for building-in |
| Over voltage category (OVC) | OVC II |
| Class of equipment | Not Classified |
| Access location | N/A |
| Pollution degree (PD) | PD 2 |
| Manufacturer's specified maximum operating ambient | See Technical Considerations section. °C |
| 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) | 0.35 kg |
| | |
| **POSSIBLE TEST CASE VERDICTS:** | |
| - test case does not apply to the test object..... : | N/A |
| - test object does meet the requirement ..... : | P (Pass) |
| - test object does not meet the requirement ..... : | F (Fail) |
| **TESTING:** | |
| Date of receipt of test item..... : | 2010-08-26, 2018-05-01, 2018-10-15 |
| Date (s) of performance of tests..... : | 2010-09-20 TO 2011-03-11, 2018-07-03, 2018-10-15, 2018-11-26 |
| | |
| **GENERAL REMARKS:** | |
| **"(See Enclosure #)" refers to additional information appended to the report.**<br>**"(See appended table)" refers to a table appended to the report.**<br><br>**Throughout this report a ☐ comma / ☒ point is used as the decimal separator.** | |
| **Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:** | |
| The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... : | ☐ **Yes**<br>☒ **Not applicable** |

| When differences exist; they shall be identified in the General product information section. | |
|---|---|
| **Name and address of factory (ies) ..... :** | CHANNEL WELL TECHNOLOGY (GUANGZHOU) CO LTD<br>BLDG B<br>EASTERN HI-TECH INDUSTRIAL BASE<br>ZENGJIANG STR, ZENGCHENG<br>GUANGZHOU<br>GUANGDONG 511300 CHINA |

**GENERAL PRODUCT INFORMATION:**

**Report Summary**

All applicable tests according to the referenced standard(S) have been carried out.

**Product Description**

The product is an AC/DC switching mode power supply with open-frame type, and it is intended for building-in from factory installation as a component of the end product.

**Model Differences**

All models with the Model VFT150PSXX series are identical with exception for output ratings and transformer secondary construction.

Maximum Output Load conditions:

Convectional Cooling at Tma=50°C :
VFT150PS05: 5 Vdc, 16 A
VFT150PS12: 12 Vdc, 8.3 A
VFT150PS15: 15 Vdc, 6.7 A
VFT150PS24: 24 Vdc, 4.2 A
VFT150PS48: 48 Vdc, 2.1 A

Convectional Cooling at Tma=65°C :
VFT150PS05: 5 Vdc, 8 A
VFT150PS15: 15 Vdc, 3.35 A

Convectional Cooling at Tma=70°C :
VFT150PS12: 12 Vdc, 4.15 A
VFT150PS24: 24 Vdc, 2.1 A
VFT150PS48: 48 Vdc, 1.05 A

Force air cooling at Tma=50°C :
VFT150PS05: 5 Vdc, 24 A
VFT150PS12: 12 Vdc, 12.5A
VFT150PS15: 15 Vdc, 10 A
VFT150PS24: 24 Vdc, 6.25 A
VFT150PS48: 48 Vdc, 3.13 A

Force air cooling at Tma=65°C :
VFT150PS05: 5 Vdc, 12 A

VFT150PS15: 15 Vdc, 5 A

Force air cooling at Tma=70°C :
VFT150PS12: 12 Vdc, 6.25A
VFT150PS24: 24 Vdc, 3.125A
VFT150PS48: 48 Vdc, 1.565 A

**Additional application considerations – (Considerations used to test a component or sub-assembly) -**
Marking Plate is representative of all models.

The following tests were conducted under CTDP SMT/CTF Stage 1 to IEC 60950-1 E2+A1+A2 at XP POWER LLC, 401 Commonwealth Drive, Haw Par Technocentre, Lobby B, #02-02, Singapore 149598:
Input: Single-Phase (1.6.2)
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)
Ball Pressure (4.5.5, 4.5)
Electric Strength (5.2.2)
Component Failure (5.3.1, 5.3.4, 5.3.7)
Abnormal Operation (5.3.1 - 5.3.9)
Transformer Abnormal Operation (5.3.3, 5.3.7b, Annex C.1)
Power Supply Output Short-Circuit/Overload (5.3.7)

The following additional tests were conducted under CTDP SMT/CTF Stage 3 on a sample of model VFT150PS24 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)
Safeguards Against Capacitor Discharge After Disconnection of a Capacitor (5.5.2.2)
Prospective Touch Voltage and Touch Current Measurement (5.7)

**Technical Considerations**

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 50°C for all models at 100% loading; 70°C for VFT150PS12, VFT150PS24, VFT150PS48 at 50% loading; 65°C for VFT150PS05, VFT150PS15 at 50% loading. Forced Air cooling: 50°C for all models at 100% loading; 70°C for VFT150PS12, VFT150PS24, VFT150PS48 at 50% loading; 65°C for VFT150PS05, VFT150PS15 at 50% loading
- The product is intended for use on the following power systems : TN
-
- The equipment disconnect device is considered to be : To be determined in the end-product.
- 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. The correction factor is based on barometric pressure of 70kPa. If the calculated Clearance exceeded the Creepage, the Creepage was adjusted to the value of clearance.
- Power supplies covered by this report were evaluated for both Class I and Class II (double insulated). Double insulated symbol is optionally provided. Earthing symbol may only be provided for Class I power supplies.

**Engineering Conditions of Acceptability**

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 following output circuits are at ES1 energy levels : All Outputs
- The following output circuits are at PS3 energy levels : All Outputs
- The maximum investigated branch circuit rating is : 20 A
-
- The investigated Pollution Degree is : 2
-
- Proper bonding to the end-product main protective earthing termination is : Required (Class I)
- 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 : AC N
- The following end-product enclosures are required : Mechanical, Fire, Electrical
- 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) : T2, class B
- The power supply was evaluated to be used at altitudes up to : "3048 m"
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- When installed in a Class I end product, the power supply shall be mounted in a manner that provides the minimum required Clearance between the primary side of power supply and protectively earthed accessible conductive parts.
- Heatsinks are floating and considered live. They should not be accessible in the end-product.
- A suitable main disconnect device shall be provided in the end product.
- The power supplies covered by this report have a fuse in the neutral of the primary circuit. The need for a marking to warn a service person of the hazards associated with double pole/neutral fusing shall be considered in the end product.
- Consideration to repeating the Touch Current test should be given in the end-product evaluation.
- The power supplies in this report have been subject to Capacitance Discharge testing. Additional testing should not be needed if directly connected to mains e.g. using an appliance inlet, wiring terminals, etc.
- When installed in a Class II end product, the power supply shall be mounted on insulating posts in a manner that provides the minimum required Clearance between the power supply and any accessible conductive parts.