Ref. Certif. No.

US-23925-UL

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D'ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE

CERTIFICAT D'ESSAI OC

Product Produit	Component Switching Power Supply
Name and address of the applicant Nom et adresse du demandeur	XP POWER, LLC 1241 E DYER ROAD, SUITE 150, SANTA ANA, CA 92705 USA
Name and address of the manufacturer Nom et adresse du fabricant	XP POWER, LLC 1241 E DYER ROAD, SUITE 150, SANTA ANA, CA 92705 USA
Name and address of the factory Nom et adresse de l'usine Note: *When more than one factory, please report on page 2* Note: *Lorsque il y plus d'une usine, veuillez utiliser la 2ème page*	XP POWER LLC 990 BENECIA AVE SUNNYVALE, CA 94085 USA ☒ Additional Information on page 2
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	Input: 100-240Vac, 50/60Hz, 6.5A Output: See Model Differences for details.
Trademark (if any) Marque de fabrique (si elle existe)	XP
Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur	SMT
Model / Type Ref. Ref. De type	GSP500PSXXY See Page 2
Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire,, peuvent être indiqués sur la 2ème page	Additionally evaluated to EN 60601-1:2006/ A1:2013; National Differences specified in the CB Test Report. ☐ Additional Information on page 2
A sample of the product was tested and found to be in conformity with Un échantillon de ce produit a été essayé et a été considéré conforme à la	IEC 60601-1(ed.3), IEC 60601-1(ed.3);am1
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	E146893-4786479830-2 issued on 2014-09-10

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme **National de Certification**

☒ UL (US), 333 Pfingsten Rd IL 60062, Northbrook, USA
☐ UL (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK
☐ UL (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN
☐ UL (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

For full legal entity names see www.ul.com/ncbnames

Date: 2014-09-18

Signature:

Jolanta M. Wroblewska

Ref. Certif. No.

US-23925-UL

Model Details:
GSP500PSXXY (where XX = represents the output voltage between 12- 48 and Y = P or blank, maybe followed with additional suffix "-" followed by "EF" or/and "SF")

Factories:
XP POWER (KUNSHAN) LTD
230 BIN JIANG NAN RD ZHANGPU TOWN KUNSHAN JIANGSU 215300
CHINA

Additional information (if necessary)
Information complémentaire (si nécessaire)

- [x] UL (US), 333 Pfingsten Rd IL 60062, Northbrook, USA
- [ ] UL (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK
- [ ] UL (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN
- [ ] UL (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

For full legal entity names see www.ul.com/ncbnames

Date: 2014-09-18

Signature:

Jolanta M. Wroblewska

Test Report issued under the responsibility of:

IEC 60601-1
Medical electrical equipment
Part 1: General requirements for basic safety and essential performance

Report Reference No.....:	**E146893-4786479830-2**
Date of issue .....:	**2014-09-10**
Total number of pages.....:	**155**
CB Testing Laboratory.....:	**UL RTP**
Address .....:	12 Laboratory Drive, Research Triangle Park , NC, 27709, USA
Applicant's name.....:	**XP Power, LLC**
Address .....:	**1241 E Dyer Road, Suite 150, Santa Ana, CA 92705 USA**
Test specification:	
Standard .....:	**IEC 60601-1: 2005 + CORR. 1:2006 + CORR. 2:2007 + AM1:2012 (or IEC 60601-1: 2012 reprint)**
Test procedure.....:	**CB Scheme**
Non-standard test method……..:	N/A
Test Report Form No.....:	**IEC60601_1I**
Test Report Form 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 .....:	**Component Switching Power Supply**
Trade Mark .....:	
Manufacturer.....:	**XP Power LLC** **1241 E Dyer Road, Suite 150, Santa Ana, CA 92705 USA**
Model/Type reference.....:	GSP500PSXXY (where XX = represents the output voltage between 12- 48 and Y = P or blank, maybe followed with additional suffix "- " followed by "EF" or/and "SF")

Ratings .....:	Input: 100-240Vac, 50/60Hz, 6.5A Output: See Model Differences for details.

Testing procedure and testing location:	
☐ CB Testing Laboratory:	
Testing location/ address ..... :	
☐ Associated CB Test Laboratory:	
Testing location/ address ..... :	
Tested by (name + signature) .. :	
Approved by (+ signature) ..... :	
☐ Testing procedure: TMP	
Tested by (name + signature) .. :	
Approved by (+ signature) ..... :	
Testing location/ address ..... :	
☐ Testing procedure: WMT	
Tested by (name + signature) .. :	
Witnessed by (+ signature) ..... :	
Approved by (+ signature) ..... :	
Testing location/ address ..... :	
☒ Testing procedure: SMT	
Tested by (name + signature) .. :	Chin Chee Siang
Approved by (+ signature) ..... :	Tac Pham
Supervised by (+ signature) .... :	Richard Dolle
Testing location/ address ..... :	XP POWER LTD., 401 COMMONWEALTH DR HAW PAR TECHNOCENTRE LOBBY B, #02-02 SINGAPORE 149598

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

National Differences (9 pages)

Enclosures (97 pages)

Summary of testing: Unless otherwise indicated, all tests were conducted at XP POWER LTD., 401 COMMONWEALTH DR HAW PAR TECHNOCENTRE LOBBY B, #02-02 SINGAPORE 149598

All testing conducted under the Applicant's IEC 60601-1, 3rd Ed investigation issued under CBTR No. E146893-A51-CB-1 was consider to cover the requirements of IEC 60601-1, Edition 3.1:2012-08.

Tests performed (name of test and test clause):

Power Input Test (4.11)

Humidity Preconditioning Treatment (5.7)
Voltage or Charge Limitation (8.4.3)
Working Voltage Measurement (8.5.4)
Dielectric Voltage Withstand (8.8.3)
Ball Pressure (8.8.4.1)
Temperature Test (11)
Abnormal Operation and Single Fault Conditions (13)
Power Availability (13.1.2)
Transformer Overload and Short-Circuit Tests (15.5.1)
Transformer Dielectric Voltage Withstand (15.5.2)
Leakage Current Test (8.7)

RISK MANAGEMENT FILE Review (4.2)

Testing location:

XP POWER LTD., 401 COMMONWEALTH DR HAW PAR TECHNOCENTRE LOBBY B, #02-02 SINGAPORE 149598

Summary of compliance with National Differences

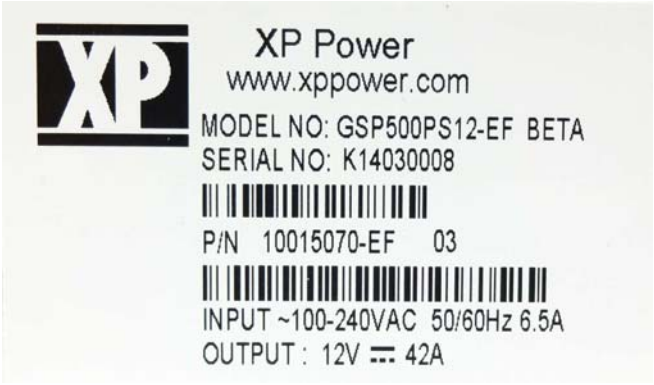
List of countries addressed: CA, US

☒ The product fulfils the requirements of IEC 60601-1:2005 with Am. 1:2012

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

Representative of all models covered under this Report.



GENERAL INFORMATION	
Test item particulars (see also Clause 6):	
Classification of installation and use ..... :	For building-in
Device type (component/sub-assembly/ equipment/ system) ..... :	Component
Intended use (Including type of patient, application location) ..... :	Component switching power supply
Mode of operation ..... :	Continuous
Supply connection ..... :	For building-in
Accessories and detachable parts included ..... :	None
Other options include ..... :	None
Testing	
Date of receipt of test item(s) ..... :	2013-10-17, 2014-07-03
Dates tests performed ..... :	2014-04-24 to 2014-05-19, 2014-07-03
Possible test case verdicts:	
- test case does not apply to the test object .....:	N/A
- test object does meet the requirement .....:	Pass (P)
- test object was not evaluated for the requirement..... :	N/E (collateral standards only)
- test object does not meet the requirement .....:	Fail (F)
Abbreviations used in the report:	
- normal condition .....: N.C.	- single fault condition..... : S.F.C.
- means of Operator protection .....: MOOP	- means of Patient protection ..... : MOPP

General remarks:

"(See Attachment #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.
The tests 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 testing laboratory.
List of test equipment must be kept on file and available for review.
Additional test data and/or information provided in the attachments to this report.

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**
☐ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies)..... :	**XP Power LLC** **990 Benecia Ave** **Sunnyvale, CA 94085 USA** **XP Power (Kunshan) Ltd** **230 Bin Jiang Nan Rd** **Zhangpu Town** **Kunshan** **Jiangsu 215300 China**

General product information:

Report Summary
All applicable tests according to the referenced standard(s) have been carried out.

Product Description
The models covered in this report are dual output component power supplies intended for use in Medical Electrical Equipment. They are open frame power supplies intended for building-in.

Model Differences:
The power supplies in the series are differentiated by the output voltage and current ratings, number of turns of primary/secondary windings in the Transformers (T1 (Power)), and minor differences in the secondary circuit components and PWB layout.

The basic model is provided with U-shaped chassis and top cover.

See below for Model Ratings Table Below:

Convection Cooling Method : 180W output max
Model GSP500PS12: Output Rated (V1): 10.1 - 13.5 Vdc, 17 A max (180 W) @ 50 C ambient;
10.1 - 13.5 Vdc, 8.5 A (90 W) @ 70 C ambient
Model GSP500PS15: Output Rated (V1): 13.6 - 17 Vdc, 12 A (180 W) @ 50 C ambient;
13.6 - 17 Vdc, 6 A (90 W) @ 70 C ambient
Model GSP500PS18: Output Rated (V1): 17.1 - 21 Vdc, 10 A max (180 W) @ 50 C ambient;
17.1 - 21 Vdc, 5 A (90 W) @ 70 C ambient
Model GSP500PS24: Output Rated (V1): 21.1 - 26 Vdc, 7.5 A (180 W) @ 50 C ambient;
21.1 - 26 Vdc, 3.75 A (90 W) @ 70 C ambient
Model GSP500PS28: Output Rated (V1): 26.1 - 31 Vdc, 6.43 A (180 W) @ 50 C ambient;
26.1 - 31 Vdc, 3.22 A (90 W) @ 70 C ambient
Model GSP500PS36: Output Rated (V1): 33.1 - 42 Vdc, 5 A (180 W) @ 50 C ambient;
33.1 - 42 Vdc, 2.5 A (90 W) @ 70 C ambient
Model GSP500PS48: Output Rated (V1): (42.1 - 52 Vdc, 3.75 A (180 W) @ 50 C ambient;
42.1 - 52 Vdc, 1.88 A (90 W) @ 70 C ambient

Forced air cooling method : 500W output max
Model GSP500PS12: Output Rated (V1): (V1) 10.1 - 13.5 Vdc, 42 A (500 W) @ 50 C ambient;
10.1 - 13.5 Vdc, 25 A (250 W) @ 70 C ambient
Model GSP500PS15: Output Rated (V1): (V1) 13.6 - 17 Vdc, 33.33 A (500 W) @ 50 C ambient;
13.6 - 17 Vdc, 16.67 A (250 W) @ 70 C ambient
Model GSP500PS18: Output Rated (V1): 17.1 - 21 Vdc, 10 A max (180 W) @ 50 C ambient;
17.1 - 21 Vdc, 5 A (90 W) @ 70 C ambient
Model GSP500PS24: Output Rated (V1): 21.1 - 26 Vdc, 21 A (500 W) @ 50 C ambient;
21.1 - 26 Vdc, 10.5 A (250 W) @ 70 C ambient

Model GSP500PS28: Output Rated (V1): 26.1 - 31 Vdc, 17.86 A (500 W) @ 50 C ambient;
26.1 - 31 Vdc, 8.93 A (250 W) @ 70 C ambient
Model GSP500PS36: Output Rated (V1): 33.1 - 42 Vdc, 13.89 A (500 W) @ 50 C ambient;
33.1 - 42 Vdc, 6.95 A (250 W) @ 70 C ambient
Model GSP500PS48: Output Rated (V1): 42.1 - 52 Vdc, 10.5 A (500 W) @ 50 C ambient;
42.1 - 52 Vdc, 5.25 A (250 W) @ 70 C ambient

Stand-by Output for all models: (V2) 5Vdc, 2A
Fan Output for all models: (V3) 12 Vdc, 0.3 A

Units provided with suffix "-EF" provided with End Fan (15 CFM)
Units provided with suffix "-SF" indicates models provided with only one fuse in the line and no fuse in the neutral.
Units provided with P (e.g. GSP500PS12P) indicates construction variation to current sensing transformer T100.
See Enclosure for details.

Additional Information:

The required clearance values have been assessed for suitability up to 5000 m elevation (1.29 correction factor as per Table 8 of IEC 60601-1).

The need for the additional testing and evaluation shall be determined in the end product investigation

The nameplate markings provided are considered representative of the entire series.

The power supply series covered by this report employ 2 MOPP between Primary and Secondary circuits.

Testing to IEC 60601-1-2 was not conducted by UL and no supporting evidence of compliance has been presented. 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 IEC 60601-1-2.

Licenses older than 3 years to be provided by the manufacturer upon request.

The schematics are kept on file at the CBTL and can be provided by the manufacturer upon request by NCB's/CBTL's.

This report is a reissue of CBTR Ref. No.: E146893-4786479830-1, CB Test Certificate Ref. No. US-23838-UL. Based on the previously conducted testing and the review of product technical documentation including photos, schematics, wiring diagrams and similar, has been determined that the product continues to comply with the standard.

Technical Considerations

- The product was investigated to the following additional standards:: ANSI/AAMI ES 60601-1, AMD1 (Medical Electrical Equipment - Part 1: General Requirements for Basic Safety and Essential Performance) (includes Deviations for United States), CSA C22.2 No. 60601-1:14 (Medical Electrical Equipment - Part 1: General Requirements for Basic Safety and Essential Performance) (includes National Differences for Canada), IEC 60601-1 Edition 3.1, 2012-08, EN 60601-1:2006+A1:2013
- 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 degree of protection against harmful ingress of water is:: Ordinary
- The mode of operation is:: Continuous
- The product is suitable for use in the presence of a flammable anesthetics mixture with air or oxygen or with nitrous oxide:: No
- The means of connection to the mains supply is: for building-in, to be determined in end-product

Engineering Conditions of Acceptability
When installed in an end-product, consideration must be given to the following:

- These components have been judged on the basis of the required spacings in the ANSI/AAMI ES60601-1, AMD1 (Medical Electrical Equipment - Part 1: General Requirements for Basic Safety and Essential Performance), CAN/CSA-C22.2 No. 60601-1:14 (Medical Electrical Equipment - Part 1: General Requirements for Basic Safety and Essential Performance), IEC 60601-1 Edition 3.1, 2012-08, EN 60601-1:2006+A1:2013 which covers the end-use product for which the component was designed
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 50°C at full rated load and 70°C at 50% of rated load.
- Power supply provides the following MOPP (means of patient protection): two MOPP based upon a working voltage 284 Vrms, 475 Vpk between Primary to Secondary, one MOPP based upon a working voltage 241 Vrms, 343 Vpk between Primary and Earth/Enclosure, one MOPP based upon on working voltage 48Vdc or Functional between secondary output to ground
- The power supply terminals and/or connectors are: Not investigated for field wiring
- 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
- 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: Input Connector (CON1) N terminal.
- 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): T1, and (Class F, 155°C) , T2 and T100 (Class B, 130°C or Class F, 155°C)
- The following end-product enclosures are required: Electrical, Mechanical, Fire
- Suitable disconnect device is to be provided in the end system
- Temperature, Leakage and Dielectric Strength testing shall be considered in the end system and consideration of non-frequency weighted leakage current (clause 8.7.3e) to also be considered as part of the end product.
- Clearance spacing evaluated for 5000 m altitude. Additional consideration maybe necessary in the end-use product.
- Printed Wiring Board rated 130°C
- Units provided with additional suffix "SF", provided with only one fuse. The need for additional fusing shall be determined as part of the end product.
- Heatsinks are floating and considered live. They should not be accessible in the end-product
- The device shall be installed in compliance with the enclosure, mounting, spacing, casualty, markings, and segregation requirements of the end-use application
- ME Equipment is component for building-in. Applicability of the following is to be determined in End Product Evaluation: 5.9 - Accessibility, 7 - Identification marking and Documents, 8.4.2 - Accessible Parts Including Applied Parts, 8.6 - Protective Earthing, 8.11.1 - Isolation from Supply Mains, 8.11.3 - Power Supply Cords, 9 - Protection against mechanical hazards, 11.3 - Fire Enclosure, 11.8 - Interruption of power supply, 15.3 - Mechanical Strength, 15.4.1 - Construction of Connectors, 15.4.4 – Indicators
- Overcurrent releases of adequate breaking capacity must be employed in the end product.
- 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.
- The available voltage for the secondary outputs does not exceed 25 Vac or 60 Vdc, under normal and single fault conditions
- 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.
- Models covered under this Report have been evaluated for 50°C and 70°C ambient with either an end fan option or 15 cfm external air-flow for open frame and U-channel options applied at chassis edge (near C20 and D60)

- The Limited Short-Circuit Test (Clause 2.6.3.4 in IEC 609501-1) in addition to the Protective Bonding Test II (Clause 2.6.3.4, 2.6.1 in IEC 60950-1) was not performed.

Ref. Certif. No.

US-23588-UL

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE CERTIFICATS D'ESSAIS DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE

CERTIFICAT D'ESSAI OC

Product Produit	Power Supply
Name and address of the applicant Nom et adresse du demandeur	XP POWER LLC SUITE 150 1241 E DYER RD SANTA ANA CA 92705 UNITED STATES
Name and address of the manufacturer Nom et adresse du fabricant	XP POWER LLC SUITE 150 1241 E DYER RD SANTA ANA CA 92705 UNITED STATES
Name and address of the factory Nom et adresse de l'usine Note: *When more than one factory, please report on page 2* Note: *Lorsque il y plus d'une usine, veuillez utiliser la 2ème page*	XP POWER LLC 990 BENECIA AVE SUNNYVALE CA 94085 UNITED STATES ☒ Additional Information on page 2
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	Input: 100-240 Vac, 50/60 Hz, 6.5A Output: See test report for details
Trademark (if any) Marque de fabrique (si elle existe)	XP
Type of Manufacturer's Testing Laboratories used Type de programme du laboratoire d'essais constructeur	SMT
Model / Type Ref. Ref. De type	GSP500PSXX See Page 2
Additional information (if necessary may also be reported on page 2) Les informations complémentaires (si nécessaire,, peuvent être indiqués sur la 2ème page	Additionally evaluated to EN 60950-1:2006 /A11:2009/A1:2010/ A12:2011; National Differences specified in the CB Test Report. ☐ Additional Information on page 2
A sample of the product was tested and found to be in conformity with Un échantillon de ce produit a été essayé et a été considéré conforme à la	IEC 60950-1(ed.2), IEC 60950-1(ed.2);am1
As shown in the Test Report Ref. No. which forms part of this Certificate Comme indiqué dans le Rapport d'essais numéro de référence qui constitue partie de ce Certificat	E139109-A134-CB-1 issued on 2014-07-09

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme **National de Certification**

☒ UL (US), 333 Pfingsten Rd IL 60062, Northbrook, USA
☐ UL (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK
☐ UL (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN
☐ UL (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

For full legal entity names see www.ul.com/ncbnames

Date: 2014-07-09

Signature:

Jolanta M. Wroblewska

Ref. Certif. No.

US-23588-UL

Model Details:
GSP500PSXX (where XX = represents the output voltage between 12- 48, maybe followed with additional suffix "-" followed by "EF" or/and "SF" or/and "-R")

Factories:
XP POWER (KUNSHAN) LIMITED
230, BIN JIANG NAN ROAD, ZHANG PU TOWN KUNSHAN, JIANGSU 215300
CHINA

Additional information (if necessary)
Information complémentaire (si nécessaire)

- [x] UL (US), 333 Pfingsten Rd IL 60062, Northbrook, USA
- [ ] UL (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK
- [ ] UL (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN
- [ ] UL (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

For full legal entity names see www.ul.com/ncbnames

Date: 2014-07-09

Signature:

Jolanta M. Wroblewska

Test Report issued under the responsibility of:

TEST REPORT
IEC 60950-1
Information technology equipment - Safety - Part 1: General requirements

Report Reference No ..... :	E139109-A134-CB-1
Date of issue ..... :	2014-07-09
Total number of pages ..... :	90
CB Testing Laboratory ..... :	UL San Jose
Address ..... :	455 E. Trimble Rd., San Jose, CA, 95131-1230, USA
Applicant's name ..... :	XP POWER L L C
Address ..... :	SUITE 150 1241 E DYER RD SANTA ANA CA 92705 UNITED STATES
Test specification:	
Standard ..... :	IEC 60950-1:2005 (2nd Edition); Am 1:2009
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC60950_1C
Test Report Form originator ..... :	SGS Fimko Ltd
Master TRF ..... :	2012-08

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 ..... :	Power Supply
Trade Mark ..... :	
Manufacturer ..... :	XP POWER LLC SUITE 150 1241 E DYER RD SANTA ANA CA 92705 UNITED STATES
Model/Type reference ..... :	GSP500PSXX (where XX = represents the output voltage between 12- 48, maybe followed with additional suffix “-“ followed by “EF” or/and "SF" or/and “-R”)
Ratings ..... :	Input: 100-240 Vac, 50/60 Hz, 6.5A Output: See Model Differences for details

Testing procedure and testing location:			
[ ]	**CB Testing Laboratory**		
	Testing location / address..... :		
[ ]	**Associated CB Test Laboratory**		
	Testing location / address..... :		
	Tested by (name + signature) ..... :		
	Approved by (name + signature) ... :		
[ ]	**Testing Procedure: TMP/CTF Stage 1**		
	Tested by (name + signature) ..... :		
	Approved by (+ signature) ..... :		
	Testing location / address..... :		
[ ]	**Testing Procedure: WMT/CTF Stage 2**		
	Tested by (name + signature) ..... :		
	Witnessed by (+ signature)..... :		
	Approved by (+ signature) ..... :		
	Testing location / address..... :		
[x]	**Testing Procedure: SMT/CTF Stage 3 or 4**		
	Tested by (name + signature) ..... :	Chin Chee Siang	
	Approved by (+ signature) ..... :	Tac Pham	
	Supervised by (+ signature) ..... :	David E. Drewes	
	Testing location / address..... :	XP Power, LLC, 1241 E Dyer Rd, Suite 150, Santa Ana, CA, 92705 USA	
[ ]	**Testing Procedure: RMT**		
	Tested by (name + signature) ..... :		
	Approved by (+ signature) ..... :		
	Supervised by (+ signature) ..... :		
	Testing location / address..... :		

List of Attachments

National Differences (41 pages)

Enclosures (104 pages)

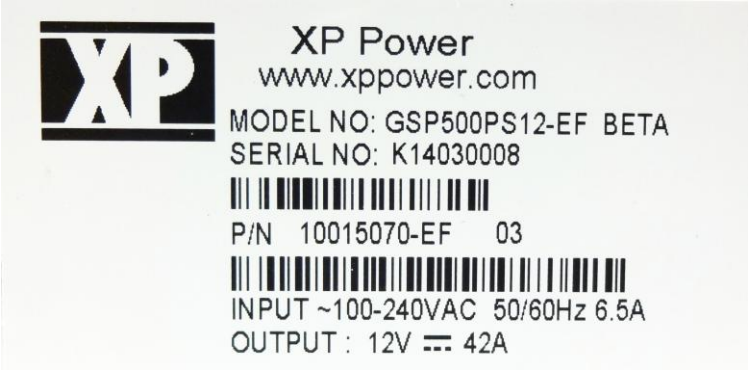
Summary Of Testing

Unless otherwise indicated, all tests were conducted at XP Power, LLC, 1241 E Dyer Rd, Suite 150, Santa Ana, CA, 92705 USA.

Tests performed (name of test and test clause)	Testing location / Comments
Guide Information Page - Maximum Output Voltage, Current, and Volt Ampere Measurement (1.2.2.1)	
Input: Single-Phase (1.6.2)	
Energy Hazard Measurements (2.1.1.5, 2.1.2, 1.2.8.10)	
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)	
Thin Sheet Material (2.10.5.9, 2.10.5.10, 2.10.5.6)	
Transformer and Wire /Insulation Electric Strength (2.10.5.13)	
Heating (4.5.1, 1.4.12, 1.4.13)	
Ball Pressure (4.5.5, 4.5)	
Touch Current (Single-Phase; TN/TT System) (5.1, Annex D)	
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)	
Summary of Compliance with National Differences:	
Countries outside the CB Scheme membership may also accept this report.	
List of countries addressed: AT, BE, BG, BY, CA, CH, CZ, DE, DK, ES, EU, FI, FR, GB, GR, HU, IE, IL, IT, JP, KR, NL, NO, PL, PT, RO, SE, SG, SI, SK, UA, US	
The product fulfills the requirements of: CSA C22.2 No. 60950-1-07 + A1:2011, EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011, UL 60950-1 2nd Ed. Revised 2011-12-19, IEC 60950-1:2005 + A1:2009	

Copy of Marking Plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Test item particulars :	
Equipment mobility ..... :	for building-in
Connection to the mains ..... :	To be determined in end-use product
Operating condition ..... :	continuous
Access location ..... :	To be determined in end-use product
Over voltage category (OVC) ..... :	OVC II
Mains supply tolerance (%) or absolute mains supply values ..... :	+10%, -10%
Tested for IT power systems ..... :	Yes
IT testing, phase-phase voltage (V) ..... :	230
Class of equipment ..... :	Class I (earthed)
Considered current rating of protective device as part of the building installation (A) ..... :	20 A
Pollution degree (PD) ..... :	PD 2
IP protection class ..... :	IPX0
Altitude of operation (m) ..... :	5000
Altitude of test laboratory (m) ..... :	less than 2000 meters
Mass of equipment (kg) ..... :	0.9
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(s) of receipt of test item ..... :	2013-10-17
Date(s) of Performance of tests ..... :	2014-04-24 to 2014-05-19

General remarks:

"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

Manufacturer's Declaration per Sub Clause 4.2.5 of IECEE 02: Yes

The application for obtaining a CB Test Certificate includes more than one factory 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 .....

When differences exist, they shall be identified in the General Product Information section.

Name and address of Factory(ies):
XP POWER LLC
990 BENECIA AVE
SUNNYVALE CA 94085
UNITED STATES

XP POWER (KUNSHAN) LIMITED
230, BIN JIANG NAN ROAD,
ZHANG PU TOWN
KUNSHAN,
JIANGSU 215300 CHINA

GENERAL PRODUCT INFORMATION:

Report Summary

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

Product Description

The product is a component AC-DC power supply for building-in, open frame type provided with a metal chassis, incorporating primary and SELV components.

The main PWB is secured to the chassis studs by multiple machine screws.

Model Differences

The power supplies in the series are differentiated by the output voltage and current ratings, number of turns of primary/secondary windings in the Transformers (T1 (Power)), and minor differences in the secondary circuit components and PWB layout.

The basic model is provided with U-shaped chassis and top cover.

See below for Model Ratings Table Below:

Convection Cooling Method : 180W output max
Model GSP500PS12: Output Rated: 10.1 - 13.5 Vdc, 15 A max (180 W) @ 50 C ambient;
10.1 - 13.5 Vdc, 7.5 A (90 W) @ 70 C ambient
Model GSP500PS15: Output Rated: 13.5 - 17 Vdc, 12 A (180 W) @ 50 C ambient;
13.5 - 17 Vdc, 6 A (90 W) @ 70 C ambient
Model GSP500PS24: Output Rated: 21.1 - 26 Vdc, 7.5 A (180 W) @ 50 C ambient;
21.1 - 26 Vdc, 3.75 A (90 W) @ 70 C ambient
Model GSP500PS28: Output Rated: 26.1 - 31 Vdc, 6.43 A (180 W) @ 50 C ambient;
26.1 - 31 Vdc, 3.22 A (90 W) @ 70 C ambient
Model GSP500PS36: Output Rated: 33.1 - 42 Vdc, 5 A (180 W) @ 50 C ambient;
33.1 - 42 Vdc, 2.5 A (90 W) @ 70 C ambient
Model GSP500PS48: Output Rated: 42.1 - 52 Vdc, 3.75 A (180 W) @ 50 C ambient;
42.1 - 52 Vdc, 1.88 A (90 W) @ 70 C ambient

Forced air cooling method : 500W output max
Model GSP500PS12: Output Rated: 10.1 - 13.5 Vdc, 42 A (500 W) @ 50 C ambient;
10.1 - 13.5 Vdc, 25 A (250 W) @ 70 C ambient
Model GSP500PS15: Output Rated: 13.5 - 17 Vdc, 33.33 A (500 W) @ 50 C ambient;
13.5 - 17 Vdc, 16.67 A (250 W) @ 70 C ambient
Model GSP500PS24: Output Rated: 21.1 - 26 Vdc, 21 A (500 W) @ 50 C ambient;
21.1 - 26 Vdc, 10.5 A (250 W) @ 70 C ambient
Model GSP500PS28: Output Rated: 26.1 - 31 Vdc, 17.86 A (500 W) @ 50 C ambient;
26.1 - 31 Vdc, 8.93 A (250 W) @ 70 C ambient

Model GSP500PS36: Output Rated: 33.1 - 42 Vdc, 13.89 A (500 W) @ 50 C ambient;
33.1 - 42 Vdc, 6.95 A (250 W) @ 70 C ambient
Model GSP500PS48: Output Rated: 42.1 - 52 Vdc, 10.5 A (500 W) @ 50 C ambient;
42.1 - 52 Vdc, 5.25 A (250 W) @ 70 C ambient

Stand-by Output for all models: 5Vdc, 2A
Fan Output for all models: 12 Vdc, 0.3 A

Units provided with suffix "-EF" provided with End Fan.
Units provided with suffix "-SF" indicates models provided with only one fuse in the line and no fuse in the neutral.
Units provided with suffix "-R" indicates construction variation to current sensing transformer T100. See enclosure 4-04 for details.

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 Double/Reinforced Insulation between Primary and Secondary circuits.

Licenses older than 3 years to be provided by the manufacturer upon request.

Marking label is representative of all models.

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 at full rated load and 70°C at 50% rated load
- The means of connection to the mains supply is: for building-in, to be determined in the end product.
- The product is intended for use on the following power systems: TN, IT
- The product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 (which includes all European national differences, including those specified in this test report).
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: Load side of C21 (Pri to Sec bridging capacitor),
- 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. --

Engineering Conditions of Acceptability

When installed in an end-product, consideration must be given to the following:

- The following Production-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-Earthed Dead Metal: 241 Vrms, 343 Vpk, Primary-SELV: 284 Vrms, 475 Vpk,

- The following secondary output circuits are SELV: All outputs
- The following secondary output circuits are at hazardous energy levels: All outputs (excluding Fan and 5V standby)
- The power supply terminals and/or connectors are: Not investigated for field wiring
- 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
- 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: J1
- 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): T1, and (Class F, 155°C) , T2 and T100 (Class B, 130°C or Class F, 155°C)
- The following end-product enclosures are required: Mechanical, Fire, Electrical
- The maximum continuous power supply output (Watts) relied on forced air cooling from: 15 cfm fan applied at chassis edge (near C20 and D60)
- The equipment is suitable for direct connection to: AC mains supply. Means of connection willl need to be evaluated in the end product.,
- Fans: For models with the suffix "EF", the fan provided in this sub-assembly is not intended for operator access.
- Printed Wiring Board rated 130°C. --
- Heatsinks are floating and considered live. They should not be accessible in the end-product. --
- Touch Current test to be considered in the end-product evaluation. --
- Clearance spacing evaluated for 5000 m altitude. Additional consideration maybe necessary in the end-use product. --
- End product to determine the need for "Double Pole Fuse" Marking for units provided with double , pole fusing. --
- The equipment may be provided with a fuse in both the Line and Neutral of the primary circuit. --
- Heating test should be repeated in the end-use product --
- Heating test was not conducted on unit with input/output leads. If unit is provided with input and/or output leads, then temperature on leads must be measured and cannot exceed 105°C. --

Abbreviations used in the report:

- normal condition	N.C.	- single fault condition	S.F.C
- operational insulation	OP	- basic insulation	BI
- basic insulation between parts of opposite polarity:	BOP	- supplementary insulation	SI
- double insulation	DI	- reinforced insulation	RI

Indicate used abbreviations (if any)