Ref. Certif. No.

US-20923-M1-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 LTD 401 COMMONWEALTH DR HAW PAR TECHNOCENTRE LOBBY B, #02-02 149598 Singapore
Name and address of the manufacturer Nom et adresse du fabricant	XP POWER LTD 401 COMMONWEALTH DR HAW PAR TECHNOCENTRE LOBBY B, #02-02 149598 Singapore
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*	ABES TECHNOLOGY CO LTD 3 LANE 891, SEC 1 ZHANGSHUI RD XIUSHUI HSIANG CHANGHUA HSIEN 504 TAIWAN ☐ Additional Information on page 2
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	See Page 2
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	TMP
Model / Type Ref. Ref. De type	ECP225PSXX 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	☒ 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)
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	E346017-A3-CB-1 issued on 2013-02-19

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: 2013-02-26
Original Issue Date: 2013-02-19

Signature:

Jolanta M. Wroblewska

Ref. Certif. No.

US-20923-M1-UL

Model Details:
ECP225PSXX (where XX can be any number between 12 and 48 designating the output voltage), may also be provided with suffix "SF" or "3x5".

Ratings:
Input: 100-240 Vac, 3.0A, 50/60 Hz

Output:
Model Name (Convection cooling)
ECP225PS12: 12 Vdc, 12.5 A
ECP225PS15: 15 Vdc, 10.0 A
ECP225PS24: 24 Vdc, 6.25 A
ECP225PS28: 28 Vdc, 5.36 A
ECP225PS48: 48 Vdc, 3.1 A

Model Name (Forced cooling)
ECP225PS12: 12 Vdc, 18.75 A
ECP225PS15: 15 Vdc, 15.0 A
ECP225PS24: 24 Vdc, 9.38 A
ECP225PS28: 28 Vdc, 8.04 A
ECP225PS48: 48 Vdc, 4.69 A

Additional Information:
For building-in. Also investigated to EN 60601-1: 2006. National Differences specified in the CB Test Report.
Reason for correction: correct model description in certificate due to typo.

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

☒ 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: 2013-02-26
Original Issue Date: 2013-02-19

Signature:

Jolanta M. Wroblewska

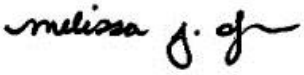
Test Report issued under the responsibility of:

TEST REPORT
IEC 60601-1
Medical Electrical Equipment
Part 1:General requirements for basic safety and essential performance

Report Reference No ..... :	E346017-A3-CB-1
Date of issue ..... :	2013-02-19
Total number of pages ..... :	207
CB Testing Laboratory ..... :	UL Northbrook
Address ..... :	333 Pfingsten Road, Northbrook, IL, 60062-2096, USA
Applicant's name ..... :	XP POWER LTD
Address ..... :	401 COMMONWEALTH DR HAW PAR TECHNOCENTRE LOBBY B, #02-02 SINGAPORE 149598 SINGAPORE
Test specification:	
Standard ..... :	IEC 60601-1: 2005 + CORR. 1 (2006) + CORR. 2 (2007)
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC60601_1G
Test Report Form originator ..... :	UL LLC
Master TRF ..... :	Dated 2010-11

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.

Test item description ..... :	Power Supply
Trade Mark ..... :	
Manufacturer ..... :	XP POWER LTD 401 COMMONWEALTH DR HAW PAR TECHNOCENTRE LOBBY B, #02-02 SINGAPORE 149598 SINGAPORE
Model/Type reference ..... :	ECP225PSXX (where XX can be any number between 12 and 48 designating the output voltage), may also be provided with suffix "SF" or "3x5".
Ratings ..... :	Input: 100-240 Vac, 3.0A, 50/60 Hz Output: Model Name (Convection cooling) ECP225PS12: 12 Vdc, 12.5 A ECP225PS15: 15 Vdc, 10.0 A ECP225PS24: 24 Vdc, 6.25 A ECP225PS28: 28 Vdc, 5.36 A ECP225PS48: 48 Vdc, 3.1 A Model Name (Forced cooling) ECP225PS12: 12 Vdc, 18.75 A ECP225PS15: 15 Vdc, 15.0 A ECP225PS24: 24 Vdc, 9.38 A ECP225PS28: 28 Vdc, 8.04 A ECP225PS48: 48 Vdc, 4.69 A

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) ... :		
[x]	**Testing Procedure: TMP**		
	Tested by (name + signature) ..... :	Lesley Tee	
	Approved by (+ signature) ..... :	Melissa DeGuia	
	Testing location / address..... :	XP POWER LTD, 401 COMMONWEALTH DR, HAW PAR TECHNOCENTRE, LOBBY B, #02-02, SINGAPORE 149598 SINGAPORE	
[ ]	**Testing Procedure: WMT**		
	Tested by (name + signature) ..... :		
	Witnessed by (+ signature)..... :		
	Approved by (+ signature) ..... :		
	Testing location / address..... :		
[ ]	**Testing Procedure: SMT**		
	Tested by (name + signature) ..... :		
	Approved by (+ signature) ..... :		
	Supervised by (+ signature) ..... :		
	Testing location / address..... :		
[ ]	**Testing Procedure: RMT**		
	Tested by (name + signature) ..... :		
	Approved by (+ signature) ..... :		
	Supervised by (+ signature) ..... :		
	Testing location / address..... :		

List of Attachments

National Differences (10 pages)

Enclosures (204 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 SINGAPORE.

	Tests performed (name of test and test clause)	**Testing location / Comments**
	Power Input Test (4.11)	XP Power LTD, 401 Commonwealth Dr.,

	Haw Par Technocentre, Lobby B, #02-02, Singapore 149598/SMT
Humidity Preconditioning Treatment (5.7)	XP Power LTD, 401 Commonwealth Dr., Haw Par Technocentre, Lobby B, #02-02, Singapore 149598/SMT
Voltage or Charge Limitation (8.4.3)	XP Power LTD, 401 Commonwealth Dr., Haw Par Technocentre, Lobby B, #02-02, Singapore 149598/SMT
Voltage Limitation (Part 2) (8.4.4)	XP Power LTD, 401 Commonwealth Dr., Haw Par Technocentre, Lobby B, #02-02, Singapore 149598/SMT
Working Voltage Measurement (8.5.4)	XP Power LTD, 401 Commonwealth Dr., Haw Par Technocentre, Lobby B, #02-02, Singapore 149598/SMT
Dielectric Voltage Withstand (8.8.3)	XP Power LTD, 401 Commonwealth Dr., Haw Par Technocentre, Lobby B, #02-02, Singapore 149598/SMT
Ball Pressure (8.8.4.1)	XP Power LTD, 401 Commonwealth Dr., Haw Par Technocentre, Lobby B, #02-02, Singapore 149598/SMT
Temperature Test (11)	XP Power LTD, 401 Commonwealth Dr., Haw Par Technocentre, Lobby B, #02-02, Singapore 149598/SMT
Abnormal Operation and Single Fault Conditions (13)	XP Power LTD, 401 Commonwealth Dr., Haw Par Technocentre, Lobby B, #02-02, Singapore 149598/SMT
Power Availability (13.1.2)	XP Power LTD, 401 Commonwealth Dr., Haw Par Technocentre, Lobby B, #02-02, Singapore 149598/SMT
Leakage Current Test (8.7)	XP Power LTD, 401 Commonwealth Dr., Haw Par Technocentre, Lobby B, #02-02, Singapore 149598/SMT

Summary of Compliance with National Differences:

Countries outside the CB Scheme membership may also accept this report.

List of countries addressed: AT, BE, CA, CH, CZ, DE, DK, FI, FR, GB, HU, IL, IT, NL, PL, SE, SG, SI, SK, TR, UA, US

The product fulfills the requirements of: ANSI/AAMI ES60601-1 (2005 + C1:09 + A2:10), CAN/CSA-C22.2 No. 60601-1 (2008), IEC 60601-1: 2005, EN 60601-1: 2006 + CORR: 2010

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

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) .....:	Provide regulated power
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) .....:	2012-10-05
Dates tests performed .....:	2012-10-22 to 2012-11-16
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 was not evaluated for the requirement :	N / E
- test object does not meet the requirement .....:	F(Fail)

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 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 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 point is used as the decimal separator.

Manufacturer's Declaration per Sub Clause 6.25 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory and a declaration form the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	Not Applicable

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

Name and address of Factory(ies):	ABES TECHNOLOGY CO LTD 3 LANE 891, SEC 1 ZHANGSHUI RD XIUSHUI HSIANG CHANGHUA HSIEN 504 TAIWAN

GENERAL PRODUCT INFORMATION:

Report Summary

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

Product Description

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

Model Differences

All models in the Model ECP225PSXX Series are identical with exception to the Mains Transformer TR1, and minor secondary components that allow for different output voltage ratings. See below for output ratings for up to 50°C and forced cooling airflow from a 15 CFM fan:

Model Name (Convection cooling)
ECP225PS12: 12 Vdc, 12.5 A
ECP225PS15: 15 Vdc, 10.0 A
ECP225PS24: 24 Vdc, 6.25 A
ECP225PS28: 28 Vdc, 5.36 A
ECP225PS48: 48 Vdc, 3.1 A

Model Name (Forced cooling)
ECP225PS12: 12 Vdc, 18.75 A
ECP225PS15: 15 Vdc, 15.0 A
ECP225PS24: 24 Vdc, 9.38 A
ECP225PS28: 28 Vdc, 8.04 A
ECP225PS48: 48 Vdc, 4.69 A

Additional suffix "SF" denotes units provided with only a single line side fuse;
Additional suffix "3x5" denotes extended PCB with no change in the PCB traces. Refer to Enclosure 5-01 for 2.5x5 PCB size and 5-02 for 3x5 PCB size.

Additional Information

N/A

Technical Considerations

- The product was investigated to the following additional standards: EN 60601-1: 2006 + CORR: 2010 (Medical electrical equipment Part 1: General requirements for basic safety and essential performance), CAN/CSA-C22.2 No. 60601-1 (2008) (Medical Electrical Equipment - Part 1: General Requirements for Basic Safety and Essential Performance) (includes National Differences for Canada), ANSI/AAMI ES60601-1 (2005 + C1:09 + A2:10) (Medical Electrical Equipment - Part 1: General Requirements for Basic Safety and Essential Performance) (includes Deviations for United States)
- The product was not investigated to the following standards or clauses: Biocompatibility (ISO 10993-

1), Clause 14, Programmable Electronic Systems, Electromagnetic Compatibility (IEC 60601-1-2)

- 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 power supply was evaluated for use in 50°C ambient at Full Rated Output and 50% of the Rated Output in 70°C ambient. --
- Scope of Power Supply evaluation defers the following clauses to the 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) --
- Scope of Power Supply evaluation excludes the following: Patient applied parts clauses: 4.6, 7.2.10, 8.3, 8.5.2, 8.5.5, 8.7.4.7-8.7.4.9, 8.9.1.15; Battery related clauses: 7.3.3, 15.4.3; Hand Control related clauses: 8.10.4; Oxygen related clauses: 11.2.2; Fluids related clauses: 11.6.2 – 11.6.4; Sterilization clause: 11.6.7; Biocompatibility Clause: 11.7 (ISO 10993); Motor related clauses: 13.2.13.3, 13.4; Heating Elements related clause: 13.2; Flammable Anaesthetic Mixtures Protection: Annex G --

Engineering Conditions of Acceptability

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

- Note: No default COAs exist for 60601 ,
- 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. --
- Power supply provides the following MOPP (means of patient protection): 2MOPP based upon a working voltage 240 Vrms, 500 Vpk between Primary to Secondary, 1MOPP based upon a working voltage 240 Vrms, 375 Vpk between Primary and Earth/Enclosure, and 1MOPP based upon a working voltage 240 Vrms (input voltage) between Secondary and Earth/Enclosure --
- 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 Dielectric Strength Test conducted on this power supply was based upon a maximum working voltage of: Primary-Earthed Dead Metal (Class I units): 375 Vpk, 240 Vrms; Primary-SEC: 500 Vpk, 240 Vrms. --
- Protective bonding testing shall be considered in the end product application. --
- 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): TR1 (Class B, 130°C) --
- Printed Wiring Board rated 130°C. --
- 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. --
- The products were tested on a 20 A branch circuit. If used on a branch circuit greater than this,

additional testing may be necessary. --

- Temperature, Leakage Current, Protective Earthing, Dielectric Voltage Withstand, and Interruption of the Power Supply tests should be considered as part of the end product evaluation. --
- Unit to be suitably earthed as part of the end product. --
- Q1 Heatsink considered live and should not be earthed. --
- End product shall provide necessary creepage and clearance for 250Vrms from input connector pins to mounting means. --
- Power supply fuse was provided with limited breaking capacity and was evaluated for installation where the maximum fault current was limited. End product shall ensure the power supply is used in applications where the limited breaking capacity does not result in unacceptable risk. --
- The input/output connectors are not acceptable for field connections, they are only intended for factory wiring inside the end-use product. --
- 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. --
- Considerations to the applied parts requirement, to be conducted as end-product --
- The product was submitted and tested for use at the manufacturer's recommended ambient temperature (Tmra) of 50°C at Full Load and 70°C at Half Load. --
- End-product shall provide an external forced air cooling, 15 CFM max, towards DUT, located at input connector with a distance of 4 cm --

Ref. Certif. No.

DK-30082-A1-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	Switching Power Supply for building-in
Name and address of the applicant Nom et adresse du demandeur	XP POWER L L C 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 LTD 401 COMMONWEALTH DR HAW PAR TECHNOCENTRE LOBBY B, #02-02 SINGAPORE149598 SINGAPORE
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*	ABES TECHNOLOGY CO LTD 3 LANE 891 SEC 1 ZHANGSHUI RD XIUSHUI HSIANG CHANGHUA HSIEN 504 TAIWAN ☐ Additional Information on page 2
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	See Page 2
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	
Model / Type Ref. Ref. De type	ECP225PSXX 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	E317867-A71-CB-1 issued on 2013-07-09

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: 2013-07-09
Original Issue Date: 2012-12-28

Signature:

Jan-Erik Storgaard

Ref. Certif. No.

DK-30082-A1-UL

Model Details:
ECP225PSXX (where XX can be any number between 12 and 48 designating the output voltage), may also be provided with suffix "SF" or "3X5"

Ratings:
Input:
100-240 Vac, 50/60 Hz, 3.0 A
Output:
Model Name (Convection cooling)
ECP225PS12: 12 Vdc, 12.5 A
ECP225PS15: 15 Vdc, 10.0 A
ECP225PS24: 24 Vdc, 6.25 A
ECP225PS28: 28 Vdc, 5.36 A
ECP225PS48: 48 Vdc, 3.1 A
Model Name (Forced cooling)
ECP225PS12: 12 Vdc, 18.75 A
ECP225PS15: 15 Vdc, 15.0 A
ECP225PS24: 24 Vdc, 9.38 A
ECP225PS28: 28 Vdc, 8.04 A
ECP225PS48: 48 Vdc, 4.69 A

Additional Information:
The original report was modified to include the following changes/additions:
Update model description, see test report

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

☐ 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: 2013-07-09
Original Issue Date: 2012-12-28

Signature:

Jan-Erik Storgaard

Test Report issued under the responsibility of:

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

Report Reference No ..... :	E317867-A71-CB-1
Date of issue ..... :	2012-12-28
Total number of pages ..... :	9
CB Testing Laboratory ..... :	UL International Singapore Pte Ltd
Address ..... :	20 Kian Teck Lane, Speedy-Tech Industrial Building 627854 Singapore
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.

Test item description ..... :	Switching Power Supply for building-in
Trade Mark ..... :	
Manufacturer ..... :	XP POWER LTD 401 COMMONWEALTH DR HAW PAR TECHNOCENTRE LOBBY B, #02-02 SINGAPORE 149598 SINGAPORE
Model/Type reference ..... :	ECP225PSXX (where XX can be any number between 12 and 48 designating the output voltage), may also be provided with suffix "SF" or "3X5"
Ratings ..... :	Input: 100-240 Vac, 50/60 Hz, 3.0 A Output: Model Name (Convection cooling) ECP225PS12: 12 Vdc, 12.5 A ECP225PS15: 15 Vdc, 10.0 A ECP225PS24: 24 Vdc, 6.25 A ECP225PS28: 28 Vdc, 5.36 A ECP225PS48: 48 Vdc, 3.1 A Model Name (Forced cooling) ECP225PS12: 12 Vdc, 18.75 A ECP225PS15: 15 Vdc, 15.0 A ECP225PS24: 24 Vdc, 9.38 A ECP225PS28: 28 Vdc, 8.04 A ECP225PS48: 48 Vdc, 4.69 A

Testing procedure and testing location:			
[x]	**CB Testing Laboratory**		
	Testing location / address..... :	UL International Singapore Pte Ltd 20 Kian Teck Lane, Speedy-Tech Industrial Building 627854 Singapore	
[ ]	**Associated CB Test Laboratory**		
	Testing location / address..... :		
	Tested by (name + signature) ..... :	CheeBeng Wai	
	Approved by (name + signature) ... :	Chiang Shiau Hui	
[ ]	**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) ..... :		
	Approved by (+ signature) ..... :		
	Supervised by (+ signature) ..... :		
	Testing location / address..... :		
[ ]	**Testing Procedure: RMT**		
	Tested by (name + signature) ..... :		
	Approved by (+ signature) ..... :		
	Supervised by (+ signature) ..... :		
	Testing location / address..... :		

List of Attachments

National Differences (0 pages)

Enclosures (11 pages)

Summary of Testing:

No tests were conducted

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, CN, 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: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011

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 .....:	N/A
Operating condition .....:	continuous
Access location .....:	To be determined in end product
Over voltage category (OVC) .....:	OVC II
Mains supply tolerance (%) or absolute mains supply values .....:	+10%, -10% (manufacturer declared)
Tested for IT power systems .....:	No
IT testing, phase-phase voltage (V) .....:	N/A
Class of equipment .....:	Class I (earthed)
Considered current rating of protective device as part of the building installation (A) .....:	20
Pollution degree (PD) .....:	PD 2
IP protection class .....:	IP X0
Altitude of operation (m) .....:	5000
Altitude of test laboratory (m) .....:	less than 2000 meters
Mass of equipment (kg) .....:	0.35
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 .....:	N/A
Date(s) of Performance of tests .....:	N/A

General remarks:

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 testing laboratory.

"(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 6.2.5 of IECEE 02:

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 ..... Not Applicable

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

Name and address of Factory(ies): ABES TECHNOLOGY CO LTD
3 LANE 891
SEC 1 ZHANGSHUI RD

XIUSHUI HSIANG
CHANGHUA HSIEN
504 TAIWAN

GENERAL PRODUCT INFORMATION:

Report Summary

The original report was modified on 2013-07-09 to include the following changes/additions:
1. Additional suffix "3x5" denotes extended PCB with no change in the PCB traces.
2. The amendment report shall be read in conjunction with E317867-A71-CB-1, and DK-30082-UL issued on 2012-12-28.

Product Description

The product is a 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 Information Technology Equipment (ITE).

Model Differences

All models in the Model ECP225PSXX series are identical with exception to the Mains Transformer, TR1, and minor secondary components that allow for different output voltage ratings.

Additional Suffix "SF" denotes units provided with only a single line side fuse.

Additional suffix "3X5" denotes extended PCB with no change in the PCB traces. Refer to Enclosure 5-01 for 2.5x5 PCB size and 5-03 for 3X5 PCB size.

Additional Information

No tests conducted under this investigation due to transfer of CB Test Report Ref. No. E346017-A2-CB-1-Original. All required tests were carried out under the original investigation.

This report is a reissue of CBTR Ref. No. E346017-A2-CB-1-Original, issued date: 2012-12-21 with CB Test Certificate Ref. No. DK-29957-UL, issued date: 2012-12-21. 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

Maximum Output Load conditions:

Condition A: Convectional Cooling at Tma=50°C, 100% load :
ECP225PS12: 12 Vdc, 12.5 A
ECP225PS15: 15 Vdc, 10.0 A
ECP225PS24: 24 Vdc, 6.25 A
ECP225PS28: 28 Vdc, 5.36 A
ECP225PS48: 48 Vdc, 3.1 A

Condition B: Convectional Cooling at Tma=70°C, 50% load :
ECP225PS12: 12 Vdc, 6.25 A
ECP225PS15: 15 Vdc, 5.0 A
ECP225PS24: 24 Vdc, 3.13 A

ECP225PS28: 28 Vdc, 2.68 A
ECP225PS48: 48 Vdc, 1.55 A

Condition C: Force air cooling at Tma=50°C, 100% load :
ECP225PS12: 12 Vdc, 18.75 A
ECP225PS15: 15 Vdc, 15.0 A
ECP225PS24: 24 Vdc, 9.38 A
ECP225PS28: 28 Vdc, 8.04 A
ECP225PS48: 48 Vdc, 4.69 A

Condition D: Force air cooling at Tma=70°C, 50% load :
ECP225PS12: 12 Vdc, 9.38 A
ECP225PS15: 15 Vdc, 7.5 A
ECP225PS24: 24 Vdc, 4.69 A
ECP225PS28: 28 Vdc, 4.02 A
ECP225PS48: 48 Vdc, 2.35 A

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 full load; 70°C for half load.
- The product is intended for use on the following power systems: TN
- 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 CY7, CY8, CY9
- The Clearances and Creepage Distances have additionally been assessed for suitability up to 5000m elevation. (Table A.2 of IEC 60664-1: 2007 was applied to determinate the minimum required clearance. The factor for 5000 m is 1.48). --

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-SELV: 275 Vrms, 500 Vpk
- The following secondary output circuits are SELV: ECP225PS12: 12 Vdc, ECP225PS15: 15 Vdc, ECP225PS24: 24 Vdc, ECP225PS28: 28 Vdc, ECP225PS48: 48 Vdc
- The following secondary output circuits are at hazardous energy levels: ECP225PS12: 12 Vdc, ECP225PS15: 15 Vdc, ECP225PS24: 24 Vdc, ECP225PS28: 28 Vdc, ECP225PS48: 48 Vdc
- The following secondary output circuits are Limited Current Circuits: Load side of CY7, CY8, CY9
- The following output terminals were referenced to earth during performance testing: TR1 pin 9.
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- 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: CN1 pin 2
- 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): TR1, class B
- The following end-product enclosures are required: Electrical, Mechanical, Fire
- End-product shall provide an external forced air cooling, min. 13 CFM, towards DUT, located at input connector with a distance of 4 cm. --
- Units provided with fuses in the line and neutral shall be considered for the need for "Double Pole Fusing" warning markings as part of the end-product. --

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)