Ref. Certif. No.

US/14532/UL

IEC SYSTEM FOR CONFORMITY TESTING AND CERTIFICATION OF ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

SYSTEME CEI D'ESSAIS DE CONFORMITE ET DE CERTIFICATION DES EQUIPEMENTS ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE
CERTIFICAT D'ESSAI OC

Product *Produit*	Component - Power Supply
Name and address of the applicant *Nom et adresse du demandeur*	SL POWER ELECTRONICS CORP 6050 KING DR. BLDG A VENTURA CA 93003, USA
Name and address of the manufacturer *Nom et adresse du fabricant*	SL POWER ELECTRONICS CORP 6050 KING DR. BLDG A VENTURA CA 93003, USA
Name and address of the factory *Nom et adresse de l'usine*	SL POWER ELECTRONICS XIANGHE ANPING ECONOMIC & TECH DEVELOPING ZONE XIANGHE, HEBEI 065402, CHINA
Rating and principal characteristics *Valeurs nominales et caractéristiques principales*	Input: 100-240 V~, 50-60 Hz, 2.5-1.2 A Output: 48 V maximum, 9.2 A maximum, 220 W optional. Or see standard output models: MENT1220V24XYZ: 24 V dc/9.2 A, MENT1220V28XYZ: 28 V dc/7.9 A, MENT1220V32XYZ: 32 V dc/6.9 A, MENT1220V48XYZ: 48 V dc/4.6 A
Trademark (if any) *Marque de fabrique (si elle existe)*	Not applicable
Model / Type Ref. *Ref. de type*	MENT1220VWXYZ, where V represents the generational differences which may be any letter from A thru Z; W represents the output voltage which may be any number from 24 thru 48; X represents the output cable and connector which may be any two alphanumeric digits; Y represents the AC inlet connector which may be the letter F; F for C14 type AC inlet (Class I); and Z represents non-safety related customer options which may be any two alphanumeric digits.
Additional information (if necessary) *Information complémentaire (si nécessaire)*	The CB Test Report comprises 5 enclosures.
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*	**PUBLICATION** **IEC 60601-1 (1988) Second Edition, with Amendment No. 1 (1991) and No. 2 (1995)** with the exception of: Clause 36, Electromagnetic Compatibility, Clause 48, Biocompatibility and Clause 52.1, Programmable Electronic Systems. Inclusive of CENELEC Common Modifications. See Test Report for National Differences.
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*	E116994-A52-CB-1

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

Underwriters Laboratories

Underwriters Laboratories Inc. / GMA Certification Department, US
333 Pfingsten Road, Northbrook, IL 60062-2096
United States of America
TEL INT* +1 847 664 3008, FAX INT* +1 847 313 3008
email: jolanta.m.wroblewska@us.ul.com

Date: Issued: 2009 December 11

Signature:

Jolanta M. Wroblewska

COVER PAGE FOR TEST REPORT

Product Category:	Power Supplies, Medical and Dental
Product Category CCN:	QQHM2, QQHM8
Test Procedure:	Component Recognition
Product:	Component - Power Supply
Model/Type Reference:	MENT1220VWXYZ, where V represents the generational differences which may be any letter from A thru Z; W represents the output voltage which may be any number from 24 thru 48; X represents the output cable and connector which may be any two alphanumeric digits; Y represents the AC inlet connector which may be the letter F; F for C14 type AC inlet (Class I); and Z represents non-safety related customer options which may be any two alphanumeric digits.
Rating(s):	Input: 100-240 V~, 50-60 Hz, 2.5-1.2 A Output: 48 V maximum, 9.2 A maximum, 220 W optional. or see below for standard output models. MENT1220V24XYZ: 24 V dc/9.2 A MENT1220V28XYZ: 28 V dc/7.9 A MENT1220V32XYZ: 32 V dc/6.9 A MENT1220V48XYZ: 48 V dc/4.6 A
Standards:	UL 60601-1, 1st Edition, 2006-04-26 (Medical Electrical Equipment, Part 1: General Requirements for Safety) CAN/CSA-C22.2 No. 601.1-M90, 2005 (Medical Electrical Equipment - Part 1: General Requirements for Safety)
Applicant Name and Address:	SL POWER ELECTRONICS CORP 6050 KING DR. BLDG A VENTURA CA 93003 UNITED STATES

This Report includes the following parts, in addition to this cover page:

1. Specific Inspection Criteria
2. Specific Technical Criteria
3. Clause Verdicts
4. Critical Components
5. Test Results
6. National Differences
7. Enclosures

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 Underwriters Laboratories Inc. ('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 Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

Test Report By:

Ahmad Daoudi
Engineering Associate
Underwriters Laboratories Inc.

Reviewed By:

Michael J. Howell
Staff Engineer
Underwriters Laboratories Inc.

SPECIFIC INSPECTION CRITERIA

BA1.0	**Special Instructions to UL Representative**
BA1.1	N/A

BB1.0	**Supporting Documentation**
BB1.1	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.

BC1.0	**Markings and instructions**	
BC1.1	The following markings and instructions are provided as indicated.	
BC1.2	All clause references are from UL 60601-1, 1st Edition, 2006-04-26 (Medical Electrical Equipment, Part 1: General Requirements for Safety).	
Standard Clause	Clause Title	Marking or Instruction Details
6.1e	Company identification	Classified or Recognized company's name, Trade name, Trademark or File
6.1f	Model	Model number
6.1g	Alternating current	
	Direct current	
	Supply Connection	Voltage range, ac/dc, phases if more than single phase
6.1h	Supply Frequency	Rated frequency range in hertz
6.1j	Power Input	Amps, VA, or Watts
6.1l	IP Rating	IPX1
6.1p	Output	Rated output voltage, power, frequency.
6.1q	Attention, consult accompanying documents	

BD1.0	**Production-Line Testing Requirements**			
BD1.1	**Test Exemptions** - The following models are exempt from the indicated test			
	Model	Grounding Continuity	Dielectric Voltage Withstand	Patient Circuit Dielectric Voltage Withstand
	MENT1220VWXYZ	Test	Test	Exempt
BD1.2	**Solid-State Component Test Exemptions** - The following solid-state components may be disconnected from the remainder of the circuitry during either Dielectric Voltage Withstand Test:			
	N/A			

BE1.0	**Sample and Test Specifics for Follow-Up Tests at UL**			
BE1.1	The following tests shall be conducted in accordance with the Generic Inspection Instructions			
	Model	Samples	Test	Test Details
	N/A	N/A	N/A	N/A

SPECIFIC TECHNICAL CRITERIA

TEST REPORT UL 60601-1 Medical Electrical Equipment Part 1: General requirements for safety	
Report Reference No	E116994-A52-UL-1
Compiled by	Ahmad Daoudi
Reviewed by	Michael J. Howell
Date of issue	2009-12-11
Standards	UL 60601-1, 1st Edition, 2006-04-26 (Medical Electrical Equipment, Part 1: General Requirements for Safety) CAN/CSA-C22.2 No. 601.1-M90, 2005 (Medical Electrical Equipment - Part 1: General Requirements for Safety)
Test procedure	Component Recognition
Non-standard test method	N/A
Test item description	Component - Power Supply
Trademark	None
Model and/or type reference	MENT1220VWXYZ, where V represents the generational differences which may be any letter from A thru Z; W represents the output voltage which may be any number from 24 thru 48; X represents the output cable and connector which may be any two alphanumeric digits; Y represents the AC inlet connector which may be the letter F; F for C14 type AC inlet (Class I); and Z represents non-safety related customer options which may be any two alphanumeric digits.
Rating(s)	Input: 100-240 V~, 50-60 Hz, 2.5-1.2 A Output: 48 V maximum, 9.2 A maximum, 220 W optional. or see below for standard output models. MENT1220V24XYZ: 24 V dc/9.2 A MENT1220V28XYZ: 28 V dc/7.9 A MENT1220V32XYZ: 32 V dc/6.9 A MENT1220V48XYZ: 48 V dc/4.6 A

GENERAL INFORMATION				
Test item particulars (see also clause 5):				
Classification of installation and use ..... :	Portable			
Supply connection ..... :	Appliance coupler			
Accessories and detachable parts included in the evaluation ..... :	None			
Options included ..... :	None			
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) (acceptable only if a corresponding, less stringent national requirement is "Pass")			
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	
General remarks:				
- "(see Enclosure #)" refers to additional information appended to the Test Report				
- "(see appended table)" refers to a table appended to the Test Report				
- Throughout the Test Report a point is used as the decimal separator				

General Product Information:	
CA1.0	**Report Summary**
CA1.1	N/A
CB1.0	**Product Description**
CB1.1	Component - Switching Power Supply
CC1.0	**Model Differences**
CC1.1	The models differ in output ratings which requires different turns and gage in transformers T301 & T302 and secondary circuitry component values to accommodate the rated output. Other differences are output cable/connector and non-safety related customer options.
CD1.0	**Additional Information**

CD1.1	The schematics for these models are kept in file at the CB Testing Laboratory mentioned in the first page of this test report, and can be provided by the manufacturer upon request by NCB's/CBTL's. The Marking Plate is representative of all models. Optional 220 W reference not shown. 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 the applicable collateral standards.	
CE1.0	**Technical Considerations**	
CE1.1	The product was investigated to the following additional standards:	EN 60601-1: 1990 + A1:1993 + A2:1995;, UL 60601-1, 1st Edition, 2006-04-26 (includes National Differences for USA); CAN/CSA-C22.2 No. 601.1-M90 (R2005) (includes National Differences for Canada)
CE1.2	The product was not investigated to the following standards or clauses:	Clause 36, Electromagnetic Compatibility (IEC 601-1-2), Clause 48, Biocompatibility (ISO 10993-1), Clause 52.1, Programmable Electronic Systems (IEC 601-1-4)
CE1.3	The product is Classified only to the following hazards:	Casualty, Fire, Shock
CE1.4	The degree of protection against harmful ingress of water is:	IPX1
CE1.5	The following accessories were investigated for use with the product:	None
CE1.6	The mode of operation is:	Continuous
CE1.7	Software is relied upon for meeting safety requirements related to mechanical, fire and shock:	No
CE1.8	The product is suitable for use in the presence of a flammable anesthetics mixture with air or oxygen or with nitrous oxide:	No
CF1.0	**Engineering Conditions of Acceptability**	
CF1.1	For use only in or with complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc. When installed in an end-product, consideration must be given to the following:	
CF2.0	This component has been judged on the basis of the required spacings in the First Edition of the Standards for Medical Electrical Equipment, Part 1: General Requirements for Safety, UL 60601-1, which covers the end use product for which the component is designed.	--

CF2.1	The component is provided with a plastic enclosure (V-0) that is suitable for fire and shock hazards.	--
CF2.2	The output circuits have not been evaluated for direct patient connection (Type B, BF or CF).	--
CF2.3	The Temperature Test was performed in a raised ambient of 40℃.	--
CF2.4	The power supply was evaluated as Reinforced insulation between primary and secondary; basic insulation between primary to ground/heatsink; and basic insulation between secondary to heatsink. In addition, the power supply was evaluated with either the output + or - connected to ground/heatsink.	--
CF2.5	The power supply has been evaluated as Class I equipment. All have been evaluated for continuous operation, and have not been evaluated for use in the presence of a flammable anesthetic mixture with air, oxygen, or nitrous oxide.	--
CF2.6	The output has been evaluated and tested for operator accessible part. Under normal and single fault conditions, the outputs do not exceed 25 V ac or 60 V dc.	--
CF2.7	The product was evaluated as a desk top and/or portable use only. Additional evaluation may be required as part of end product investigation to insure compliance of the product as mobile device.	--
CF2.8	The component has been evaluated for non-patient care equipment and patient care equipment but not patient connected.	--
CF2.9	Leakage current must be performed on the combination power supply and the end-use product.	--
CF3	The following statement shall be provided in the end product. "To ensure that grounding reliability is achieved, the power supply shall be connected to receptacle marked 'Hospital Only' or 'Hospital Grade'. The marking can be provided on the power supply, the end product, or on the power supply cord set.	--
CF3.1	Installation instructions and end product markings are the responsibility of the end-use product manufacturer.	--

DEMKO CERTIFICATE

Certificate No.	149472-01
Page	1/3
Date of Issue	2009-12-22
Certificate Holder	SL POWER ELECTRONICS CORP 6050 KING DR. BLDG A VENTURA CA 93003, USA
Manufacturer	SL POWER ELECTRONICS CORP 6050 KING DR. BLDG A VENTURA CA 93003, USA
Production site	SL POWER ELECTRONICS XIANGHE ANPING ECONOMIC & TECH DEVELOPING ZONE XIANGHE, HEBEI 065402, CHINA
Certified Product	Component - Power Supply
Model	MENT1220VWXYZ
Trademark	Not applicable
Rated Voltage / Frequency	100-240 V~, 50-60 Hz
Rated Current / Power	2.5-1.2 A
Insulation Class	I
Degree of protection (IP)	X1
Tested acc. to	EN 60601-1:1990 + A1:1993 + A2:1995
Test Report No.	E116994-A52-CB-1 issue date 2009-12-11
Additional	See appendix. Testing done under the Superviesed Manufacturer's Testing (SMT) procedure.
Expire date	2019-12-11

Certification Manager
Jan-Erik Storgaard

The product and production sites listed on the certificate comply with the D-mark requirements and the UL Global Service Agreement, with reference to Terms and Conditions for the D mark. The Owner of the certificate is entitled to use the δ or for cables ‹DEMKO›, for the products listed on the certificate and manufactured at the production sites listed. UL has to be informed in writing about any changes to the product or production site in accordance with the Term and Conditions of the D mark. The validity of the certificate is shortened if the EU legislation require re-testing and re-certification due to new standards or amendments coming into force before the expiry date.

Certification Body
UL International Demko A/S, Lyskaer 8, P.O. Box 514, DK-2730 Herlev, Denmark, Tel. +45 44 85 65 65, info.dk@dk.ul.com
www.ul-europe.com

Appendix DEMKO CERTIFICATE

Additional :

Type key : where V represents the generational differences which may be any letter from A thru Z; W represents the output voltage which may be any number from 24 thru 48; X represents the output cable and connector which may be any two alphanumeric digits; Y represents the AC inlet connector which may be the letter F; F for C14 type AC inlet (Class I); and Z represents non-safety related customer options which may be any two alphanumeric digits.

Output: 48 V maximum,
9.2 A maximum,
220 W optional.
or see below for standard output models.
MENT1220V24XYZ: 24 V dc/9.2 A
MENT1220V28XYZ: 28 V dc/7.9 A
MENT1220V32XYZ: 32 V dc/6.9 A
MENT1220V48XYZ: 48 V dc/4.6 A

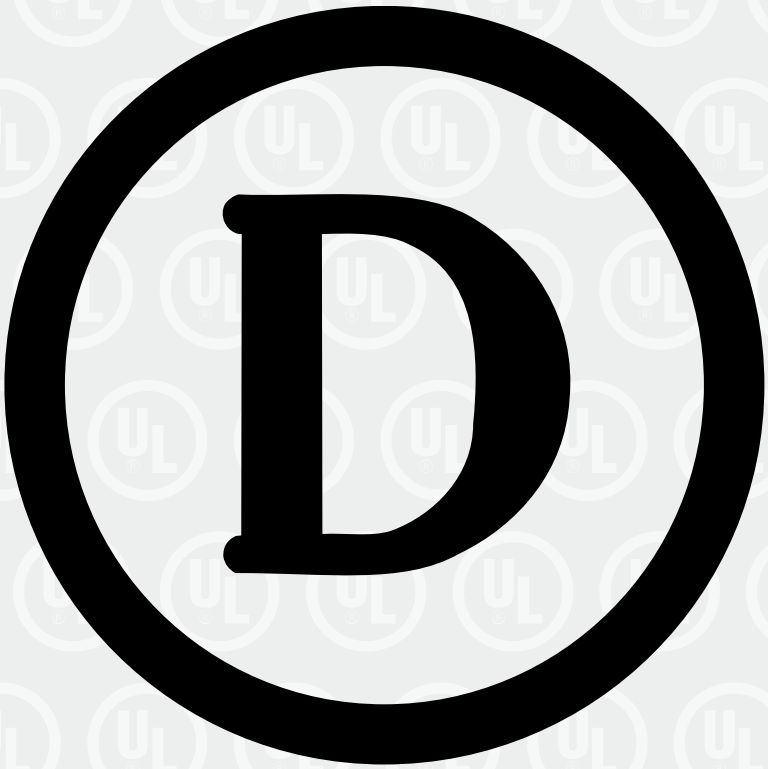
The certificate has been issued on the basis of CB certificate (CB Test certificate) No. US/14532/UL, issued by Underwriters Laboratories Inc, dated 2009-12-11

Certification Body

UL International Demko A/S, Lyskaer 8, P.O. Box 514, DK-2730 Herlev, Denmark, Tel. +45 44 85 65 65, info.dk@dk.ul.com
www.ul-europe.com

Appendix DEMKO Certificate

Certification Mark	**D-mark**
Certificate No.	149472-01
Page	3/3
Date of Issue	2009-12-22



Certification Body

UL International Demko A/S, Lyskaer 8, P.O. Box 514, DK-2730 Herlev, Denmark, Tel. +45 44 85 65 65, info.dk@dk.ul.com
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