

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Component Recognition
CCN:	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Product:	Switching Power Supply
Model:	GB60SXXYWW Where XX represents output voltage which may be any number from 12 to 48, Y can be K (for Class I construction) or C (for Class II construction) or P (for Pin version with Class I or Class II), WW may be any number from 00 to 99 or blank, designates additional configurations indicating non-safety related options.
Rating:	Input: 100-240 Vac, 1.4A, 50-60 Hz Output: Refer to enclosure 7-01 for output rating
Applicant Name and Address:	SL POWER ELECTRONICS CORP BLDG A 6050 KING DR VENTURA CA 93003 UNITED STATES

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared by: Gregory Ray / Project Handler

Reviewed by: Randy Johnson / Final Reviewer

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
 - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
 - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
 - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

The units are open-frame AC/DC power supplies, designed for building-in to an end-product.

The units were evaluated to operate up to the altitude of 3000 m.

Model Differences

All models were similar in construction except for secondary winding of transformer and output rating.

GB60SXXYWW:

Where XX represents output voltage which may be any number from 12 to 48, Y can be K (for Class I construction) or C (for Class II construction) or P (for Pin version with Class I or Class II), WW may be any number from 00 to 99 or blank, designates additional configurations indicating non-safety related options.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : To be determined
- Operating condition : continuous
- Access location : To be determined
- 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 V
- Class of equipment : Class I (earthed) or Class II (double insulated)
- Considered current rating of protective device as part of the building installation (A) : 16 A (20 A for north America)
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : up to 3000 m
- Altitude of test laboratory (m) : less than 2000 m
- Mass of equipment (kg) : 0.183
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma)

permitted by the manufacturer's specification of: 50°C with full power, derated power at 60, 70 and 80°C convection cooled (See Enclosure 7-01). Alternatively, the power supply may be provided with forced-air cooling for full rated power up to 80°C ambient.

- The means of connection to the mains supply is: Determined in end-product
- The product is intended for use on the following power systems: IT, TN
- The equipment disconnect device is considered to be: Determined in end-product
- The product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (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: C21 load side
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual

Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. 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: 271 Vrms, 512 Vpk, Primary-Earth: 240 Vrms, 344 Vpk
- The following secondary output circuits are SELV: All outputs
- The following secondary output circuits are at non-hazardous energy levels: All outputs
- The following secondary output circuits are Limited Current Circuits: C21 load side.
- 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 for Class I construction
- 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: N pin of input connector
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJ2 insulation system with the indicated rating greater than Class A (105°C): T1 (Class B)
- The following end-product enclosures are required: Fire, Electrical
- The equipment is suitable for direct connection to: AC mains supply
- For class II construction: Y caps C1, C2 and Inductor L2 were removed, and the cl/cr between primary to Pin G1 complied with basic insulation. The spacing shall be reconsidered in end use. Refer to enclosure 3-02 and 3-03 for reference.
- If dual fuses used in this product (F1 and F2, where F2 is optional), Clause 2.7.6 shall be reconsidered in end use
- For all configurations employing forced air cooling, the end-product shall repeat the temperature test(s) to ensure that the maximum temperature limits of the components listed in the report are not exceeded.

Additional Information

This report is a reissue of CBTR Ref. No.E135803-A70-CB-1, CB Test Certificate Ref. Nos. US-19760-UL, US-19760-A1-UL, US-19760-A2-UL, and US-19760-A2-M1-UL. Based on previously conducted testing and the review of product construction it was determined that the product continues to comply with the standard.

No tests conducted under this investigation due to reissue of CB Test Report Ref. No. E135803-A70-CB-1. All required tests were carried out under the original investigation.

The Critical Components List includes components in the product as submitted and also includes, in certain cases, alternate generic descriptions (designated as "interchangeable") for equivalent component substitutions. Recognizing NCBs may require newer or updated licenses, additional information and/or evaluation to qualify alternate components.

User's Manuals, instructions and markings will be provided in the national language of the country of sale. The manufacturer is aware of the requirements for language requirements for markings/instructions, cords/cables, plugs and EMC. Detailed information may be obtained directly from the client. See Enclosure-Miscellaneous for a Letter of Assurance.

Some of the attached Critical Component Licenses/Certs may be more than 3 years old. Manufacturer to provide updated licenses upon request from an accepting NCB.

The label is a draft of an artwork for marking plate pending approval by National Certification Bodies and it shall not be affixed to products prior to such an approval.

As part of this amendment, some components were updated and limited testing was conducted to expand the client declared ratings based on the end product application as a Technical Amendment.

Additional Standards

The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013

Markings and instructions

Clause Title	Marking or Instruction Details
Power rating - Ratings	Ratings (voltage, frequency/dc, current)
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.

Special Instructions to UL Representative

Inspect the transformer(s) listed in table "Electric Strength Test Special Constructions" per BD1.1: When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in the table be conducted at the component manufacturer.

Production-Line Testing Requirements

Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
All models	Transformer T1	--	Primary to Secondary	min. 300 0	min. 4242	1s
All models	Transformer T1	--	Secondary to core	min. 300 0	min. 4242	1s

Earthing Continuity Test Exemptions - This test is not required for the following models:

All models

Electric Strength Test Exemptions - This test is not required for the following models:

N/A

Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:

N/A

Sample and Test Specifics for Follow-Up Tests at UL

Model	Component	Material	Test	Sample(s)	Test Specifics
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