CERTIFICATE OF COMPLIANCE

Certificate Number	E135803
Report Reference	E135803-A6005-UL
Issue Date	2020-MAY-04
Issued to:	SL POWER ELECTRONICS CORP BLDG A 6050 KING DR VENTURA CA 93003
This certificate confirms that representative samples of	COMPONENT - POWER SUPPLIES FOR USE WITH AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT See Addendum Page
	Have been investigated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.
Standard(s) for Safety:	UL 62368-1 and CAN/CSA C22.2 No. 62368-1-14, Audio/video, information and communication technology equipment Part 1: Safety requirements
Additional Information:	See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number	E135803
Report Reference	E135803-A6005-UL
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This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Switching Power Supply, Models GB110SXXYWW, LB115SXXYWW
Where XX is 12 to 56, Y is K or C, WW is 00 to 99 or blank.

LB115S48KH, LB115S48KW, LB115S48KWH, LB115S36KWH, LCSP60S1943

Bruce Mahrenholz, Director North American Certification Program

UL LLC

UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 2nd Ed, 2014-12-01 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1-14, 2nd Ed-(Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Component Recognition
CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	Switching Power Supply
Model:	GB110SXXYWW LB115SXXYWW Where XX is 12 to 56, Y is K or C, WW is 00 to 99 or blank. LB115S48KH LB115S48KW LB115S48KWH LB115S36KWH LCSP60S1943
Rating:	GB110SXXYWW LB115SXXYWW LCSP60S1943 LB115S48KH INPUT:100-240V~, 50-60Hz, 2.0A OUTPUT: See Model Differences section. LB115S36KWH LB115S48KWH LB115S48KW INPUT:100-277V~, 50-60Hz, 2.0A OUTPUT: See Model Differences section.
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: Adam Tangocci / Project Handler Reviewed By: Gregory Ray / 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.

Model Differences

All models are similar in construction except for the secondary winding of the transformer, secondary components and output ratings.

The GB110SXXYWW series is similar to the LB115SXXYWW series except for minor changes on the primary and secondary components that do not impact safety.

Model LB115S48KH is similar to model LB115S48K except for the addition of a cold plate, insulation sheet, insulation tube on L1 and L2, and minor changes on the PWB layout.

Model LB115S48KWH is similar to model LB115S48KH except for the input rating, technical parameters for the fuse, X-cap, Y-cap, and MOSFET Q2.

Model LCSP60S1943 is similar to model LB115S24K except for the following:

-Output rating

-Maximum ambient temperature rating

-Primary components: J2, choke T1, transformer T2, and other minor change for SMT

-Add additional chassis, cover, output cable, insulator between PCB and chassis, and insulator between cover and heat sink

-Minor changes in the secondary circuitry

Model LB115S36KWH is similar to model LB115S48KWH except for the output rating and transformer T2.

Model LB115S48KW is similar to model LB115S48KWH except for the following:

-Output rating

-Dimension of heat sinks HS1 and HS2 (same as the LB115SXXYWW series)

-Inductor L1 (same as the LB115SXXYWW series)

-Model LB115S48KW has no cold plate, transformer block, insulator, or gap pad

Model Nomenclature

GB110SXXYWW
LB115SXXYWW

XX is 12 to 56, representing the rated output voltage.
Y is K or C, representing Class I and Class II construction, respectively.
WW is 00 to 99 or blank, representing non-safety configuration options.

Maximum Ambient Temperature (Tma) Ratings:

Models GB110SXXYWW, LB115SXXYWW, LB115S48KH, LB115S48KW, LB115S48KWH, and LB115S36KWH: 50°C
Model LCSP60S1943: 45°C

Output Ratings and Cooling Configurations:

GB110SXXYWW
LB115SXXYWW
Forced Air Cooled (200 LFM) (Marked Ratings):
Where XX is 12: 12Vdc9.59A
Where XX is 15: 15Vdc7.67A
Where XX is 24: 24Vdc4.80A
Where XX is 48: 48Vdc2.40A
Where XX is 56: 56Vdc2.05A
Note: Maximum 115 W.
Convection Cooled:
Where XX is 12: 12Vdc6.25A
Where XX is 15: 15Vdc5.00A
Where XX is 24: 24Vdc3.13A
Where XX is 48: 48Vdc1.56A
Where XX is 56: 56Vdc1.34A
Note: Maximum 75 W.

LB115S48KH
Convection Cooled:
48Vdc2.08A
Note: Maximum 100 W.

LB115S48KW
Forced Air Cooled (200 LFM) (Marked Ratings):
48Vdc2.4A
Note: Maximum 115 W.
Convection Cooled:
48Vdc1.56A

Note: Maximum 75 W.

LB115S48KWH
Convection Cooled:
48Vdc2.08A
Note: Maximum 100 W.

LB115S36KWH
Convection Cooled:
36Vdc2.78A
Note: Maximum 100 W.

LCSP60S1943
Convection Cooled:
18Vdc3.34A
Note: Maximum 60 W.

Test Item Particulars	
Classification of use by	Ordinary person
Supply Connection	AC Mains
Supply % Tolerance	+10%/-10%
Supply Connection – Type	For building-in
Considered current rating of protective device as part of building or equipment installation	20 A; building;
Equipment mobility	for building-in
Over voltage category (OVC)	OVC II
Class of equipment	Class I Class II
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient (°C)	See Model Differences section.
IP protection class	IPX0
Power Systems	TN IT - 230 V L-L
Altitude during operation (m)	3000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	0.197-0.462

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : See Model Differences section.
- The product is intended for use on the following power systems : TN, IT (230 V L-L)
- Considered current rating of protective device as part of the building installation (A) : 20
- Mains supply tolerance (%) or absolute mains supply values : +6%/-10%
- The equipment disconnect device is considered to be : To be determined in end product.
- The product was investigated to the following additional standard : UL 62368-1 2nd Edition, CSA C22.2 No. 62368-1 2nd Edition, IEC 62368-1:2014, EN 62368-1:2014 + A11:2017
- Required clearances have been adjusted by multiplying the clearance at sea level by a factor of 1.14 for operating at an altitude of 3000 meters. If the calculated clearance exceeded the creepage, the creepage was adjusted to the value of clearance.

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 product-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 : Models LB115S48KWH, LB115S36KWH Primary-Secondary: 428 Vrms, 648 Vpeak; Model LB115S48KW Primary-Secondary: 433 Vrms, 660 Vpeak; All Other Models Primary-Secondary: 383 Vrms, 594 Vpk, All Other Models Primary-Earth: 381 Vrms, 584 Vpk
- The following output circuits are at ES1 energy levels : All Outputs
- The following output circuits are at PS3 energy levels : All Outputs
- The maximum investigated branch circuit rating is : 20 A
- The investigated Pollution Degree is : 2
- Proper bonding to the end-product main protective earthing termination is : Required for models with 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 end-product enclosures are required : Electrical, Fire, Mechanical
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105°C) : T2 (Class B, 130)
- The maximum continuous power supply output (Watts) relied on forced air cooling from : See Model Differences section.
- A suitable main disconnect device shall be provided in the end product.
- The power supplies covered by this report have a fuse in the neutral of the primary circuit. A warning for service persons shall be considered in the end product.
- The power supplies in this report have been subjected to the capacitor discharge test of Clause 5.5.2.2. Additionally, all associated component safeguards have been subjected to the test of Clause G.10.2. Additional capacitor discharge testing should not be needed if directly connected to mains (e.g. using an appliance inlet, wiring terminals, etc.).
- Consideration to performing the touch current test of Clause 5.7.4 should be given in the end product evaluation.
- Consideration to monitoring the temperature of parts of this equipment during normal, abnormal, and fault operating conditions should be given in the end product evaluation.
- Power supplies covered by this report that are indicated as Class I were evaluated for building-in Class I end products.
- Power supplies covered by this report that are indicated as Class II were evaluated for building-in Class II end products. The Class II marking (IEC 60417-5172 (2003-02)) is optionally provided on these power supplies.
- When installed in the end product, the power supply shall be mounted in a manner that provides the minimum required creepage and clearance between applicable parts of the power supply, accessible conductive parts, and secondary circuits of the end product.

Additional Information

The Marking Plates provided are representative of all models.

This report is based on previously conducted testing and the review of product construction of original CBTR reference number E135803-A71-CB-2 (dated 2015-09-28) and amendments, CBTC reference numbers US-26063-UL, US-26063-A1-UL, US-28973-UL, US-26063-A2-UL, US-28973-A2-UL, US-26063-A3-UL, US-28973-A3-UL, issued by UL. Refer to the “Summary of testing” section which covers the tests accepted and the additional testing performed as part of this evaluation.

The following test was selected as representative of the test program applicable to models covered by this CBTR: Annex B.2.5 - Input Test. This test has been witnessed for models selected as representative of the standard covered by this report and of the applicable test program.

Additional Standards

The product fulfills the requirements of: UL 62368-1 2nd Edition, CSA C22.2 No. 62368-1 2nd Edition, IEC 62368-1:2014, EN 62368-1:2014 + A11:2017

Markings and Instructions

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listee's or Recognized companys name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number
Equipment rating marking – ratings	"Input Ratings (voltage, frequency/dc, current/power)", "Output Ratings (voltage, frequency/dc, current/power)"

Special Instructions to UL Representative

N/A