UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 3rd Ed, 2021-10-22 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1:19, 3rd Ed, 2021-10-22 (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:	AC-DC Power Supply
Model:	DRB480-24-1-xyz DRB480-48-1-xyz where x, y, z may be any letter or digit or blank, considered non safety relevant information, see model differences
Rating:	INPUT: 100-240VAC, 5.4A, 50/60Hz OUTPUT: DRB480-24-1-xyz: 24-26.4Vdc, 20-18.2A (max 480W) DRB480-48-1-xyz: 48-52.8 Vdc, 10-9.09A (max 480W)
Applicant Name and Address:	TDK-LAMBDA SWITZERLAND SA VIA LUSERTE SUD 6 6572 QUARTINO SWITZERLAND

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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.

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Prepared By:	Isaia Bonavoglia / Project Handler	Reviewed By:	Oreste Buzzetti / Reviewer

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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

Device is AC/DC switch mode power supply for building-in on DIN rail.

Model Differences

suffix '-xyz' is optional and denotes customer-specific variant (like fixed voltage or no LED), and is deemed not safety relevant.

Model DRB480-48-1 is mechanically and electrically identical to model DRB480-24-1, except for:

-different output ratings

-different transformer TX1, output choke L5

-different FET on ASSY1

-passive elements in SELV circuit to accommodate different output ratings

-changed PWB layouts -- the safety relevant part (spacings, PE path) remain unchanged,

Primary side of all models is strictly identical.

- May be prefixed by SP followed by / or – (SP represents a sales code)

Test Item Particulars

Product group ..... :	built-in component
Classification of use by ..... :	Skilled person
Supply Connection ..... :	AC Mains
Supply tolerance ..... :	+10%/-10%
Supply connection – type ..... :	mating connector
Considered current rating of protective device ... :	20 A; Location: building
Equipment mobility ..... :	for building-in
Over voltage category (OVC) ..... :	OVC II
Class of equipment ..... :	Class I
Special installation location ..... :	N/A
	0

Pollution degree (PD) ..... :	PD 2
Manufacturer's specified Tma (°C) ..... :	50 (at 480W max. output power); 70 (derate linearly down to 300W)
IP protection class ..... :	IPX0
Power systems ..... :	TN TT
Altitude during operation (m) ..... :	3000 m
Altitude of test laboratory (m) ..... :	2000 m or less
Mass of equipment (kg) ..... :	1.18

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 (full load), 70°C (with derating)
- The product is intended for use on the following power systems : TT, TN
- Considered current rating of protective device as part of the building installation (A) : 20
- Mains supply tolerance (%) or absolute mains supply : +10%/-10%
- The equipment disconnect device is considered to be : to be determined in End Product
- The following were investigated as part of the protective earthing/bonding : Printed wiring board trace (refer to Enclosure - Schematics + PWB for layouts)
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- The product was investigated to the following additional standard : EN IEC 62368-1:2020+A11:2020
- Capacitors are rated for 230V due to the IT power system used in Norway. Further evaluation may be required in the end use product.
- Multilayer PWB's accepted under CBTR Ref. No. E349607-A23 dated 2014-07-31 and letter report, see enclosure 8-08 of this report. See enclosure 7-03 for rationale for waived tests.

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 : Earthing Continuity, Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary-Earthed Dead Metal: 326 Vrms, 584 Vpk, Primary-SELV: 264 Vrms, 550 Vpk
- The following output circuits are at ES1 energy levels : Output of DRB480-24 series
- The following output circuits are at ES2 energy levels : Output of DRB480-48 series
- The following output circuits are at PS3 energy levels : All outputs
- The maximum investigated branch circuit rating is : 20A
- 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 : Been conducted
- The following input terminals/connectors must be connected to the end-product supply neutral : J7-2
- The following end-product enclosures are required : Mechanical, Fire, Electrical
- 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) : Transformer T1 (class 155°C), Coil L4 (class 155°C), Coli L1 (class 155°C)
- The following components require special consideration during end-product Thermal (Heating) tests due to the indicated maximum temperature measurements during component-level testing : metal housing (85.8°C) - additional requirements for accessibility to be evaluated in end product.
- The power supply was evaluated to be used at altitudes up to : 3000 m

Additional Information

DERATING INFORMATION:
Max. Output power: 480W up to 50°C, derate linearly down to 300W at 70°C. See manual.

Marking label is representative of entire variants.

Reissue 1:
This report is a reissue of CBTR Ref. No.: E135494-A6043-CB-1 issued 2020-07-20 with Amendment 1 dated 2022-11-29 and CB Test Certificate Ref. DK-100174-UL with the following changes:
- test report updated to the latest edition of the standard IEC 62368-1:2018
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

Additional Standards

The product fulfills the requirements of: EN IEC 62368-1:2020+A11:2020, CSA/UL 62368-1:2019

Markings and Instructions

Clause Title	Marking or Instruction Details
See Installation Instructions	The symbol 
Equipment identification marking – Manufacturer identification	Listee’s or Recognized Company’s 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