Test Report issued under the responsibility of:

TEST REPORT
IEC 62368-1
Audio/video, information and communication technology equipment
Part 1: Safety requirements

Report Number .....:	E135494-A6014-CB-1
Date of issue.....:	2019-09-30 ; Amendment 1 : 2020-09-22
Total number of pages .....:	16
Applicant's name.....:	**TDK-LAMBDA UK LTD**
Address .....:	**KINGSLEY AVE** **ILFRACOMBE** **EX34 8ES UNITED KINGDOM**
Name of Test Laboratory preparing the Report .....:	UL VS Limited Unit 1-3 Horizon, Wade Road, Kingsland Business Park, Basingstoke RG24 8AH, United Kingdom
Test specification:	
Standard.....:	IEC 62368-1:2014 (Second Edition)
Test procedure .....:	CB Scheme
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC62368_1B
Test Report Form(s) Originator .....:	UL(US)
Master TRF.....:	2014-03

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.

General disclaimer:

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 Issuing CB Testing Laboratory.
The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test Item description :	AC-DC Power Supply for DIN rail	
Trade Mark .....:	TDK Lambda	
Manufacturer .....:	TDK-LAMBDA UK LTD KINGSLEY AVE ILFRACOMBE EX34 8ES UNITED KINGDOM	
Model/Type reference .....:	DRB30-12-1-xyz; DRB30-24-1-xyz (Where x, y and z can be any alphanumeric character or blank and is non safety relevant information.)	
Ratings .....:	Input: 100-240 Vac; 0,76 A max.; 50/60 Hz Output: DRB30-12-1-xyz: 12-15 Vdc / 2.5-2.0 A; Max. output power: 30 W DRB30-24-1-xyz: 24-28 Vdc / 1.25-1.07 A; Max. output power: 30 W	
Testing procedure and testing location:		
☒ CB Testing Laboratory:		
Testing location/ address .....:	UL VS Limited, Unit 1-3 Horizon, Wade Road, Kingsland Business Park, Basingstoke RG24 8AH, United Kingdom	
Tested by (name + signature).....:	Mark John De Sagun / Project Handler	
Approved by (name + signature) .....:	Robert Dmitruk / Reviewer	
☐ Testing procedure: CTF Stage 1		
Testing location/ address..... :		
Tested by (name + signature).....:		
Approved by (name + signature) .....:		
☐ Testing procedure: CTF Stage 2		
Testing location/ address..... :		
Tested by (name + signature).....:		
Witnessed by (name + signature).....:		
Approved by (name + signature) .....:		

☐	Testing procedure: CTF Stage 3		
☐	Testing procedure: CTF Stage 4		
Testing location/ address..... :			
Tested by (name + signature).....:			
Witnessed by (name + signature).....:			
Approved by (name + signature) .....:			
Supervised by (name + signature) .....:			

List of Attachments (including a total number of pages in each attachment):

National Differences (0 pages)
Enclosures (0 pages)

Summary of testing:

Tests performed (name of test and test clause):	**Testing Location:**
None	**None**

Summary of compliance with National Differences:

List of countries addressed: Australia / New Zealand, EU Group and National Differences, Japan, USA / Canada

EU Group and National Differences applies to CENELEC member countries: Austria , Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom

☒ **The product fulfils the requirements of:** EN 62368-1:2014 + A11:2017

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

TEST ITEM PARTICULARS:	
Classification of use by	Skilled person
Supply Connection	AC Mains
Supply % Tolerance	85V-264V
Supply Connection – Type	To be determined in End Product (pluggable A considered as worst case)
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
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient (°C)	70 with derating above 55 (see additional information)
IP protection class	IPX0
Power Systems	TN TT
Altitude during operation (m)	3000m m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	0.096 approx.
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 of receipt of test item..... :	N/A
Date (s) of performance of tests..... :	N/A
GENERAL REMARKS:	
"(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 ☐ comma / ☒ point is used as the decimal separator.**	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	

The application for obtaining a CB Test Certificate includes more than one factory location 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 ..... :	☐ **Yes** ☒ **Not applicable**
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) ..... :	TDK-LAMBDA MALAYSIA SDN BHD LOT 2 & 3, BATU 9 3/4 KAWASAN PERINDUSTRIAN BANDAR BARU JAYA GADING 26070 KUANTAN PAHANG MALAYSIA

GENERAL PRODUCT INFORMATION:

Report Summary

The original report was modified on 2020-09-22 to include the following changes/additions:
Technical Amendment: This report has been revised due to typo of the following information in the LoCC (table 4.1.2)
1. Corrected type/model for T1 (12V) from CA79901x to CA79902x.
2. Corrected type/model for T1 (24V) from CA79902x to CA79901x.
3. Corrected type/model for X-cap C1 from MPX2104K30L15LLD10(MPX2) to MPX2224M30L15LL.
4. Updated manufacturer's name of model label.

No tests were deemed necessary.
Based on the previously conducted testing and the review of product technical documentation, it has been determined that the product continues to comply with the standard.
This report should be read in conjunction with CBTR Ref. No: E135494-A6014-CB-1-Original, CBTC Ref. no: DK-88204-UL issued on 2019-09-30.

Product Description

The equipment is a switching power supply (DIN rail type) for the use in Information Technology Equipment.
The unit is intended for building-in.

Model Differences

Models DRB30-12-1-xyz and DRB30-24-1-xyz are identical except different number of turns in the separating transformer and some components in the secondary circuit.

Additional application considerations – (Considerations used to test a component or sub-assembly) -

This report is based on previously conducted testing (as listed below) and the review of product construction of original report UL Ref. No. E135494-A89, dated 2013-09-06.
Refer to Section “Test performed (name of test and test clause)” covering all applicable performance tests and rationale for waived tests. Only limited testing performed for covered models.

The temperature testing was performed in vertical application according
manufacturer specification.
Output voltage can be adjusted from 12V to 15V (total output power 30W) for model DRB30-12-1
Output voltage can be adjusted from 24V to 28V (total output power 30W) for model DRB30-24-1

Connection to the supply:
Pillar type terminal block for AC input and DC output

Circuit characteristics:
The equipment contains primary circuit and secondary (SELV) circuit and represents non-hazardous energy level.
Engineering Considerations:
Maximum operating ambient temperature:
55°C at 100% load (30W), derating above 55°C to 70°C at 50% load (15W)

Maximum Normal Load:
DRB30-12-1-xyz:
@ 55°C: 12-15 Vdc / 2.5-2.0 A; Max. output power: 30 W
@ 70°C: 12-15 Vdc / 1.25-1.0 A; Max. output power: 15 W
DRB30-24-1-xyz:
@ 55°C: 24-28 Vdc / 1.25-1.07 A; Max. output power: 30 W
@ 70°C: 24-28 Vdc / 0.625-0.535 A; Max. output power: 15 W

Additional investigation for the output to be classified as NEC Class 2 Output acc. to UL 1310 / CSA C22.2 No.223 was conducted.

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 55 °C (full load) and 70°C (with derating 50%, load).
- The product is intended for use on the following power systems : TN, TT
- Considered current rating of protective device as part of the building installation (A) : 20
- Mains supply tolerance (%) or absolute mains supply values : 85V-264V
- The equipment disconnect device is considered to be : determined in End Product
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS) : DC output
- The following were investigated as part of the protective earthing/bonding : Printed wiring board trace (refer to Enclosure - Schematics + PWB: 5-03 and 5-06 for layouts)
- The class of laser product is : Class 1 (I), Class 2 (II)
- The Risk Group of a lamp or lamp system (including LEDs) is : Exempt
- The product was investigated to the following additional standard : EN 62368-1:2014 + A11:2017
- Output of the power supply covered by this Report is classified to be NEC Class 2 Output.
- The following scope limitations apply to this test report and are confirmed by Applicant to be covered separately. Additional evaluation and/or tests may be required when submitting this CB Report to a National Certification Body (NCB) to obtain a national mark:
  1) no EMC tests nor evaluation to EMC Directive 2004/108/EC and 2014/30/EU,
  2) no evaluation to RoHS Directives 2002/95/EC, 2011/65/EU and (EU) 2016/585,
  3) no evaluation to Council Recommendation 1999/519/EC nor 2006/25/EC,
  4) only English version of markings and instructions provided and reviewed,
  5) no evaluation to Directive 96/29/Euratom,

Engineering Conditions of Acceptability
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-SELV: 245.1 Vrms, 443 Vpk, Primary-Earthed Dead Metal: 245.1 Vrms, 443 Vpk
- The following output circuits are at ES1 energy levels : DC Output
- The following output circuits are at PS2 energy levels : DC output
- 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 : been conducted
- The following input terminals/connectors must be connected to the end-product supply neutral : "N"
- The following end-product enclosures are required : Electrical, Fire
- 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) : T1 Class 155 (F)
- The power supply was evaluated to be used at altitudes up to : 3000 m