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-A6023-CB-1
Date of issue.....:	2020-03-18
Total number of pages .....:	68
Applicant's name.....:	**TDK-LAMBDA UK LTD**
Address .....:	**KINGSLEY AVE** **ILFRACOMBE** **EX34 8ES UNITED KINGDOM**
Name of Test Laboratory preparing the Report .....:	UL International Polska Sp. z o.o. Aleja Krakowska 81, 05-090 Sekocin Nowy, Poland
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 :	Power supply	
Trade Mark .....:	TDK·Lambda	
Manufacturer .....:	TDK-LAMBDA UK LTD KINGSLEY AVE ILFRACOMBE EX34 8ES UNITED KINGDOM	
Model/Type reference .....:	DRL100-24-1-xyz, DRL100-24-1/C2-xyz (where x, y and z can be any alphanumeric character or blank and is not safety relevant information)	
Ratings .....:	Input: 100-240 Vac ; 2.8 A; 50/60 Hz Output: DRL100-24-1-xyz: 24-28 Vdc ; 4.2-3.6 A (100,8 W) DRL100-24-1/C2-xyz: 24 Vdc 3.67A (88 W)	
Testing procedure and testing location:		
☒ CB Testing Laboratory:		
Testing location/ address ..... :	UL International Polska Sp. z o.o., Aleja Krakowska 81, 05-090 Sekocin Nowy, Poland	
Tested by (name + signature).....:	Piotr A. Bizunowicz / Project Handler	Piotr Bizunowicz
Approved by (name + signature) .....:	Hubert Koszewski / 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 (14 pages)
Enclosures (48 pages)

Summary of testing:

Tests performed (name of test and test clause):	**Testing Location:** **CBTL: UL International Polska Sp. z o.o., Aleja Krakowska 81, 05-090 Sekocin Nowy, Poland**
STEADY FORCE TEST FOR INTERNAL ENCLOSURE AND BARRIER (4.4.4.5, ANNEX T.3)	
STRESS RELIEF – ALTERNATE TEST PER IEC 60695-10-3 (4.4.4.7, ANNEX T.8)	
CLASSIFICATION OF ELECTRICAL ENERGY SOURCES (5.2, 5.7)	
DETERMINATION OF WORKING VOLTAGE (5.4.1.8)	
BALL PRESSURE TEST (5.4.1.10.3)	Pressure test was omitted - the test was conducted on power supply DRB15-24-1 model, with the same material (Sumitomo E4008) and for the same applicant (TDK Lambda), see Report Ref#: E135494-A88
HUMIDITY CONDITIONING (5.4.8)	
ELECTRIC STRENGTH TEST (5.4.9)	
SAFEGUARDS AGAINST CAPACITOR DISCHARGE AFTER DISCONNECTION OF A CONNECTOR (5.5.2.2)	
PROSPECTIVE TOUCH VOLTAGE AND TOUCH CURRENT MEASUREMENT (5.7)	
POWER MEASUREMENTS (6.2.2.2, 6.2.2.3)	
INPUT TEST: SINGLE PHASE (B.2.5)	
NORMAL OPERATING CONDITIONS TEMPERATURE MEASUREMENT (B.2.6)	
SIMULATED ABNORMAL OPERATING CONDITIONS (B.3)	
SIMULATED SINGLE FAULT CONDITIONS (B.4)	
TEST FOR THE PERMANENCE OF MARKINGS (ANNEX F.3.10)	
TRANSFORMER OVERLOAD (ANNEX G.5.3.3)	

Summary of compliance with National Differences:

List of countries addressed: EU Group and National Differences, USA / Canada

EU Group and National Differences applies to CENELEC member countries: Austria , Bulgaria, Belgium, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Latvia, Luxembourg, Malta, the Netherlands, Republic of North Macedonia, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Serbia, 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	Other + 10 % / - 15 %
Supply Connection – Type	To be determined in End Product
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 II
Access location	service access area
Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient (°C)	55
IP protection class	IPX0
Power Systems	TN TT IT - 230V phase-phase (Norway) V L-L
Altitude during operation (m)	3000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	0.27
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..... :	2019-10-07
Date (s) of performance of tests..... :	2020-02-19 TO 2020-03-02
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

All applicable tests according to the referenced standard(s) have been carried out.

Product Description

Device is double-insulated, switch mode power supply for DIN rail mounting.

Model Differences

Model DRL100-24-1/C2-xyz is identical to DRL100-24-1-xyz except for changes in regulating feedback loop, to throttle output power down to 85W and improve performance in single-fault condition to meet NEC Class 2 per UL1310 and LPS per UL 62368 Annex Q requirements.

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

n/a

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, Above 55 °C (derating): +55°C to + 70°C, where output power linearly derates from 100% to 60% of rated load
- The product is intended for use on the following power systems : TN, IT
- Considered current rating of protective device as part of the building installation (A) : 16 A (for Europe), 20 A (for Canada and US)
- Mains supply tolerance (%) or absolute mains supply values : +10%/ -15%
- The equipment disconnect device is considered to be : To be determined in End product
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS) : Output for model DRL100-24-1/C2-xyz only
- The Risk Group of a lamp or lamp system (including LEDs) is : Exempt
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual, including French language for Canada
- 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.
6) limited number of power supply cord types provided, additional certificates may be needed for local market

- Output for model DRL100-24-1/C2-xyz complies also with NEC/CEC class 2 circuit requirements

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 : Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary-Secondary: 277 Vrms/530 Vpk
- The following output circuits are at ES1 energy levels : DC Output
- The following output circuits are at PS2 energy levels : DC Output for model DRL100-24-1/C2-xyz only
- The following output circuits are at PS3 energy levels : DC output for model DRL100-24-1-xyz only
- 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 : Not required
- 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
- 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) : Main transformer T1 class 155 (F)
- The power supply was evaluated to be used at altitudes up to : 3000 m