



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-A6015-CB-1
Date of issue.....	2019-09-27
Total number of pages	67

Applicant's name	TDK-LAMBDA UK LTD
Address	KINGSLEY AVE ILFRACOMBE EX34 8ES UNITED KINGDOM

Name of Test Laboratory	UL International Polska Sp. z o.o.
preparing the Report	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

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General disclaimer:

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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 TDK-Lambda	
Manufacturer	: TDK-LAMBDA UK LTD KINGSLEY AVE ILFRACOMBE EX34 8ES UNITED KINGDOM	
Model/Type reference	: DRB15-24-1-xyz Where x, y and z can be any alphanumeric character or blank and is non safety relevant information	
Ratings	: Input: 100-240 Vac; 0.39 A max.; 50/60 Hz Output: 24-28 Vdc / 0.63-0.54 A; Max. output power: 15 W.	
Testing procedure and testing location:		
<input checked="" type="checkbox"/>	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	
Approved by (name + signature)	Robert Dmitruk / Reviewer	
<input type="checkbox"/>	Testing procedure: CTF Stage 1	
Testing location/ address	:	
Tested by (name + signature)		
Approved by (name + signature)		
<input type="checkbox"/>	Testing procedure: CTF Stage 2	
Testing location/ address	:	
Tested by (name + signature)		
Witnessed by (name + signature)		
Approved by (name + signature)		
<input type="checkbox"/>	Testing procedure: CTF Stage 3	
<input type="checkbox"/>	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 (30 pages)

Enclosures (38 pages)

Summary of testing:**Tests performed (name of test and test clause):**

STEADY FORCE TEST, 30 N (4.4.4.2, ANNEX T.3)

STEADY FORCE TEST FOR INTERNAL ENCLOSURE AND BARRIER (4.4.4.5, ANNEX T.3)

STRESS RELIEF TEST (4.4.4.7, ANNEX T.8)

CLASSIFICATION OF ELECTRICAL ENERGY SOURCES (5.2, 5.7)

MAXIMUM OPERATING TEMPERATURE FOR MATERIALS, COMPONENTS AND SYSTEMS (5.4.1.4, Annex B.2)

DETERMINATION OF WORKING VOLTAGE (5.4.1.8)

BALL PRESSURE TEST (5.4.1.10.3)

HUMIDITY CONDITIONING (5.4.8)

ELECTRIC STRENGTH TEST (5.4.9)

SAFEGUARDS AGAINST CAPACITOR DISCHARGE AFTER DISCONNECTION OF A CONNECTOR (5.5.2.2)

PROTECTIVE BONDING CONDUCTORS: LIMITED SHORT CIRCUIT TEST (5.6.4, Annex R)

RESISTANCE OF THE PROTECTIVE BONDING SYSTEM (5.6.6.2)

PROSPECTIVE TOUCH VOLTAGE AND TOUCH CURRENT MEASUREMENT (5.7)

POWER MEASUREMENTS (6.2.2.2, 6.2.2.3)

Testing Location:**CBTL: UL International Polska Sp. z o.o., Aleja Krakowska 81, 05-090 Sekocin Nowy, Poland**

conducted within this evaluation

tests per IEC60950-1 2nd ed+Am1 clause 4.2.3 derived from test record no.1 of E135494-A88 are considered representative.

conducted within this evaluation

Unless otherwise noted, Tests per IEC60950-1 2nd ed+Am1 clauses 2.2.2, 2.4.1, 2.10.2, 5.1 derived from test record no.1 of E135494-A88 are considered representative.

Unless otherwise noted, tests per IEC60950-1 2nd ed+Am1 clause 4.5 derived from test record no.1 of E135494-A88 are considered representative.

Tests per IEC60950-1 2nd ed+Am1 clause 2.10.2 derived from test record no.1 of E135494-A88 are considered representative.

test per IEC60950-1 2nd ed+Am1 clause 4.5.5 derived from test record no.1 of E135494-A88 is considered representative.

Unless otherwise noted, tests per IEC60950-1 2nd ed+Am1 clause 2.9.2 derived from test record no.1 of E135494-A88 are considered representative.

Unless otherwise noted, tests per IEC60950-1 2nd ed+Am1 clause 5.2 derived from test record no.1 of E135494-A88 are considered representative.

Performed within this evaluation

Performed within this evaluation

Unless otherwise noted, tests per IEC60950-1 2nd ed+Am1 clauses 2.6.1 and 2.6.3.4 derived from test record no.1 of E135494-A88 are considered representative.

Performed within this evaluation

Unless otherwise noted, tests per IEC60950-1 2nd ed+Am1 clauses 1.2.2.1, 2.1.1.5, 2.1.2 derived from test

ARCING PIS DETERMINATION (6.2.3.1)	record no.1 of E135494-A88 are considered representative. assessed by review of results of tests per IEC60950-1 2nd ed+Am1 clauses 2.2.2 and 2.10.2 derived from test record no.1 of E135494-A88
NORMAL OPERATING CONDITIONS TEMPERATURE TEST (6.3)	Unless otherwise noted, tests per IEC60950-1 2nd ed+Am1 clause 4.5 derived from test record no.1 of E135494-A88 are considered representative.
INPUT TEST: SINGLE PHASE (B.2.5)	Unless otherwise noted, tests per IEC60950-1 2nd ed+Am1 clause 4.2 derived from test record no.1 of E135494-A88 are considered representative.
NORMAL OPERATING CONDITIONS TEMPERATURE MEASUREMENT (B.2.6)	Unless otherwise noted, tests per IEC60950-1 2nd ed+Am1 clause 4.5 derived from test record no.1 of E135494-A88 are considered representative.
SIMULATED ABNORMAL OPERATING CONDITIONS (B.3)	Unless otherwise noted, tests per IEC60950-1 2nd ed+Am1 clauses 5.3.1 to 5.3.9, annex C derived from test record no.1 of E135494-A88 are considered representative.
SIMULATED SINGLE FAULT CONDITIONS (B.4)	Unless otherwise noted, tests per IEC60950-1 2nd ed+Am1 clauses 2.2.2, 2.2.3, 5.3.1 5.3.4 and 5.3.7 derived from test record no.1 of E135494-A88 are considered representative.
TEST FOR THE PERMANENCE OF MARKINGS (ANNEX F.3.10)	Performed within this evaluation
TRANSFORMER OVERLOAD (ANNEX G.5.3.3)	tests per IEC60950-1 2nd ed+Am1 annex C derived from test record no.1 of E135494-A88 are considered representative.
LIMITED POWER SOURCE (ANNEX Q.1)	tests per IEC60950-1 2nd ed+Am1 clause 2.5 derived from test record no.1 of E135494-A88 and test per UL1310 derived from Test record no. 2 of E135494-A88 are considered representative.
LIMITED SHORT CIRCUIT TEST (ANNEX R.1, 5.6.4.1, 5.6.4.4, 5.6.5.1)	Performed within this evaluation
STEADY FORCE TEST, 10 N (ANNEX T.2 , 5.4.2.6, 5.4.3.2, G.15.3.6)	tests per IEC60950-1 2nd ed+Am1 clause 4.2.2 derived from test record no.1 of E135494-A88 are considered representative.
<p>Summary of compliance with National Differences:</p> <p>List of countries addressed: AU,NZ, JP, EU Group Differences, US,CA</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of: EN 62368-1:2014 + A11:2017</p>	

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	85-264Vac
Supply Connection – Type	To be determined in End Use Application
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	Not accessible for ordinary person
Pollution degree (PD)	PD 2
Manufacturer’s specified maximum operating ambient (°C)	70 with derating after 50 (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)	0.085 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.....:	2019-07-19
Date (s) of performance of tests.....:	2019-09-06 to 2019-09-27
GENERAL REMARKS:	
<p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p>	
Manufacturer’s Declaration per sub-clause 4.2.5 of IEC60335-1:	

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 :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
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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
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GENERAL PRODUCT INFORMATION:

Report Summary

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

Product Description

Product is component AC-DC switch mode power supply for DIN rail, suitable for field wiring

Model Differences

N/A

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 UL report Ref. No. E135494-A88, dated 2013-09-05 revised 2016-05-06, Refer to Section "Test performed (name of test and test clause)" covering all applicable performance tests and rationale for waived tests.

Output voltage can be adjusted from 24V to 28V (total output power 15W).
 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 : 70°C with derating
- 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 : 85-264 Vac
- The equipment disconnect device is considered to be : considered 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 for layouts)
- 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 languages other than English
- The product was investigated to the following additional standards : EN 62368-1:2014 + A11:2017
- 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-Secondary: 241.8 Vrms, 448 Vpk, Primary-Earthed Dead Metal: 335.8 Vrms, 440 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 : TB1 (pin 2)
- 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) : T1 class 130 (B)
- The power supply was evaluated to be used at altitudes up to : 3000m