

	<p>Test Report issued under the responsibility of:</p>	
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TEST REPORT
IEC 60950-1
Information technology equipment - Safety -
Part 1: General requirements

Report Reference No	4786910628-9
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CB Testing Laboratory	UL Japan, Inc.
Address	4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan

Applicant's name	TDK-LAMBDA CORP
Address	NAGAOKA TECHNICAL CENTER
	R&D DIV
	2704-1 SETTAYA-MACHI
	NAGAOKA-SHI
	NIIGATA 940-1195 JAPAN

Test specification:	
Standard	IEC 60950-1:2005 (Second Edition); Am1:2009 + Am2:2013
Test procedure	CB Scheme
Non-standard test method	N/A

Test Report Form No.	IEC60950_1F
Test Report Form originator	SGS Fimko Ltd
Master TRF	Dated 2014-02

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Test item description	Switching Power Supply
Trade Mark	TDK·Lambda
Manufacturer	TDK-LAMBDA CORP NAGAOKA TECHNICAL CENTER R&D DIV 2704-1 SETTAYA-MACHI NAGAOKA-SHI NIIGATA 940-1195 JAPAN
Model/Type reference	ZWS50-3, -5, -12, -15, -24, -36, -48 May be followed by suffix /J, /A, /JA ZWS50-17/ITA
Ratings	Input: AC 100-240V, 50/60Hz, 1.4A Output: ZWS50-3 3.3Vdc, 10.0A ZWS50-5 5Vdc, 10.0A ZWS50-12 12Vdc, 4.3A ZWS50-15 15Vdc, 3.5A ZWS50-24 24Vdc, 2.1A ZWS50-36 36Vdc, 1.4A ZWS50-48 48Vdc, 1.1A ZWS50-17/ITA 17Vdc, 2.9A

Testing procedure and testing location:	
<input checked="" type="checkbox"/> CB Testing Laboratory	Testing location / address: UL Japan, Inc. 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan
<input type="checkbox"/> Associated CB Test Laboratory	Testing location / address:
	Tested by (name + signature).....: Ayano Matsumoto <i>A. Matsumoto</i>
	Approved by (name + signature) ...: Tetsuo Iwasaki Tetsuo Iwasaki
<input type="checkbox"/> Testing Procedure: TMP/CTF Stage 1	Testing location / address:
	Tested by (name + signature).....: _____
	Approved by (name + signature) ...: _____
<input type="checkbox"/> Testing Procedure: WMT/CTF Stage 2	Testing location / address:
	Tested by (name + signature).....: _____
	Witnessed by (name + signature) ..: _____
	Approved by (name + signature) ...: _____
<input type="checkbox"/> Testing Procedure: SMT/CTF Stage 3 or 4	Testing location / address:
	Tested by (name + signature).....: _____
	Approved by (name + signature) ...: _____
	Supervised by (name + signature) .: _____
<input type="checkbox"/> Testing Procedure: RMT	Testing location / address:
	Tested by (name + signature).....: _____
	Approved by (name + signature) ...: _____
	Supervised by (name + signature) .: _____

List of Attachments
National Differences (24 pages)
Enclosures (34 pages)
Summary Of Testing
Unless otherwise indicated, all tests were conducted at UL Japan, Inc. 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan.

Tests performed (name of test and test clause)	Testing location / Comments
Input: Single-Phase (1.6.2)	
Capacitance Discharge (2.1.1.7)	
Humidity (2.9.1, 2.9.2, 5.2.2)	
Determination of Working Voltage; Working Voltage Measurement (2.10.2)	
Transformer and Wire /Insulation Electric Strength (2.10.5.13)	
Heating (4.5.1, 1.4.12, 1.4.13)	
Ball Pressure (4.5.5, 4.5)	
Touch Current (Single-Phase; TN/TT System) (5.1, Annex D)	
Electric Strength (5.2.2)	
Component Failure (5.3.1, 5.3.4, 5.3.7)	
Abnormal Operation (5.3.1 - 5.3.9)	
Transformer Abnormal Operation (5.3.3, 5.3.7b, Annex C.1)	
<p>Summary of Compliance with National Differences: Countries outside the CB Scheme membership may also accept this report. List of countries addressed: CA, DE, DK, EU, FI, GB, SE, SI, US The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013</p>	

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

Test item particulars :	
Equipment mobility	for building-in
Connection to the mains	not directly connected to the mains
Operating condition	continuous
Access location	restricted access location
Over voltage category (OVC)	OVC II
Mains supply tolerance (%) or absolute mains supply values	-10%, +6%
Tested for IT power systems	Yes
IT testing, phase-phase voltage (V)	230V
Class of equipment	Class I
Considered current rating of protective device as part of the building installation (A)	16A (for Europe)
Pollution degree (PD)	PD 2
IP protection class	Not rated, indoor use only
Altitude of operation (m)	≤ 2000 m
Altitude of test laboratory (m)	< 1000 m
Mass of equipment (kg)	approx.0.36kg / approx.0.6kg with optional cover, approx.1kg for model ZWS-17/ITA
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(s) of receipt of test item	1996-06, 1996-07-30
Date(s) of Performance of tests	1996-06, 1996-07-30, 1997-06, 1999-03, 2011-03
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 point is used as the decimal separator.</p>	
Manufacturer's Declaration per Sub Clause 4.2.5 of IEC60950-1:	
The application for obtaining a CB Test Certificate includes more than one factory 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
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 MALAYSIA

Wuxi TDK-Lambda Electronics Co Ltd
 NO 6
 XING CHUANG ER LU
 WUXI
 JIANGSU 214028 CHINA

ALPS LOGISTICS FACILITIES CO LTD
 593-1 NISHIOHASHI
 TSUKUBA-SHI
 IBARAKI-KEN 305-0831 JAPAN

GENERAL PRODUCT INFORMATION:

Report Summary

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

Product Description

Switching power supply for use in general office equipment (host equipment is not specified).

Model Differences

Type differences: Output voltage, transformer (turns of sec. Windings) Model ZWS-17/ITA: (see below)

Suffix differences: "/J" denotes type of input and output connector
 "/A" denotes models with optional cover and chassis provided
 "/JA" denotes combination of suffix "/A" and "/J"

Model [Ⓢ]	Output rating [Ⓢ]
ZWS50-3 [Ⓢ]	3.3Vdc, 10.0A [Ⓢ]
ZWS50-5 [Ⓢ]	5Vdc, 10.0A [Ⓢ]
ZWS50-12 [Ⓢ]	12Vdc, 4.3A [Ⓢ]
ZWS50-15 [Ⓢ]	15Vdc, 3.5A [Ⓢ]
ZWS50-24 [Ⓢ]	24Vdc, 2.1A [Ⓢ]
ZWS50-36 [Ⓢ]	36Vdc, 1.4A [Ⓢ]
ZWS50-48 [Ⓢ]	48Vdc, 1.1A [Ⓢ]
ZWS50-17/ITA [Ⓢ]	17Vdc, 2.9A [Ⓢ]

Model ZWS-17/ITA is identical to model ZWS50-15 except for:

1. Output rating (by change of non-critical components).
2. Provided with an aluminum case.
3. Uses a fixed power cord for input connection:
 - Plug: Sun Fai Industrial Co., Ltd., Type SF-282, rated 250V, 10A, approved by IMQ
 - Cord: Sun Fai Industrial Co., Ltd., Type H03VV-F, rated 300V, approved by IMQ
 - Cable Clip: Pioneer (Taiwan) Co., Ltd., Type SR-5R1 or Heyco, Type SR-5N-4
 - Connector: Japan Solderless Terminal, Type VHR

Additional Information

This report is a reissue of CBTR Ref. No.: 12027283 001, CB Test Certificate Ref. No. JPTUV-047486. 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.

Abbreviations used in the report.

- built-in application: B/I

In this Test Report, CENELEC mark license indicating compliance to EN standard was used to verify component compliance to IEC standard because the standards are technically equivalent.

It was considered that UL Standard has requirements that meet or exceed the relevant IEC requirements.

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: 50°C with 100% load and 60°C 60% load
- The product is intended for use on the following power systems: TN
- The product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 (which includes all European national differences, including those specified in this test report).

Engineering Conditions of Acceptability

When installed in an end-product, consideration must be given to the following:

- The end-product Electric Strength Test is to be based upon a maximum working voltage of: max working voltage: 300 V_{rms}, 820 V_{pk}
- The following secondary output circuits are SELV: All output
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- The maximum investigated branch circuit rating is: 16 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: Not been conducted
- 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 B)

- The following end-product enclosures are required: Fire, Electrical

Abbreviations used in the report:

- normal condition	N.C.	- single fault condition.....	S.F.C
- operational insulation	OP	- basic insulation	BI
- basic insulation between parts of opposite polarity:	BOP	- supplementary insulation	SI
- double insulation	DI	- reinforced insulation	RI

Indicate used abbreviations (if any)