



Test Report issued under
the responsibility of:



TEST REPORT
IEC 60950-1
Information technology equipment - Safety -
Part 1: General requirements

Report Reference No: E122103-A172-CB-1

Date of issue: 2015-06-24

Total number of pages: 13

CB Testing Laboratory: UL Japan, Inc.

Address: 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan

Applicant's name: TDK-LAMBDA CORP., NAGAOKA TECHNICAL CENTER

Address: 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 2704-1 SETTAYA-MACHI, NAGAOKA-SHI, NIIGATA 940-1195 JAPAN
Model/Type reference	ZWS50BAF-abcd a = 3, 5, 12, 15, 24, 48. b = "/" or blank. c = A, L or blank. d = CO2, FG, FV or blank
Ratings	Input: AC100-240V, 50/60Hz, 0.45A (for model ZWS50BAF-3) 0.67A (except for model ZWS50BAF-3) Output : DC3.3V, 10A (ZWS50BAF-3) (DC2.64V-3.63V, max. 10A, max. 33.0W) DC5V, 10A (ZWS50BAF-5) (DC4.0V-5.5V, max. 10A, max. 50.0W) DC12V, 4.3A (ZWS50BAF-12) (DC9.6V-13.2V, max. 4.3A, max. 51.6W) DC15V, 3.5A (ZWS50BAF-15) (DC12.0V-16.5V, max. 3.5A, max. 52.5W) DC24V, 2.1A (ZWS50BAF-24) (DC19.2V-26.4V, max. 2.1A, max. 50.4W) DC48V, 1.1A (ZWS50BAF-48) (DC38.4V-52.8V, max. 1.1A, max. 52.8W)

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 
Approved by (name + signature).....	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 (0 pages)
Enclosures (0 pages)
Summary of Testing:
No tests were conducted
Summary of Compliance with National Differences:
Countries outside the CB Scheme membership may also accept this report.

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Amendment 1 2015-12-18

List of countries addressed: CA, DE, DK, EU, FI, GB, KR, SE, SI, US

The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013

Copy of Marking Plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

This is uncontrolled copy when without Authorized Mark on the printed drawing. Verification of the latest version shall be conducted by P.M. system.

RoHS COMPLIANCE

ZWS50BAF-5
 INPUT 100-240VAC ~ 0.67 A
 50/60Hz
 OUTPUT 5V --- 1.0 A

CE MARK HEIGHT 5mm
 TUV MARK HEIGHT 2.5mm
 C-UL-US MARK HEIGHT 2.0mm

TDK-Lambda
 MADE IN JAPAN

1. MATERIAL ROLL 335-7 SATO : 9000-4-335_(NO.7)
 YUPO 80 MIC SYNTHETIC PAPER, WHITE (PURCHASED PRINTING)
 PET 50MIC SYNTHETIC PAPER, WHITE (FOR INHOUSE PRINTING SEAL)

2. INK BLACK

3. SAFETY UL, C-UL APPROVAL TEMPERATURE -40°C TO 100°C

4. LETTERING :

	FONT	HEIGHT (mm)
ZWS50BAF-5	IMPACT	1.5
INPUT --- OUTPUT ---	ARIAL(BOLD)	1.0
MADE IN JAPAN	ARIAL	1.0
TDK-Lambda LOGO	ORIGINAL	1.5
LOT No., SERIAL No.	ARIAL(BOLD)	1.0
DATE CODE	ARIAL(BOLD)	1.0
△EHFP	ARIAL(BOLD)	0.8

5. OTHERS

△MODEL	A	B	C	D	△MODEL CODE	E: COUNTRY OF MANUFACTURE WILL BE SHOWN. JAPAN, MALAYSIA OR CHINA.
ZWS50BAF-3 EHP	3	0.45	3.3	1.0	CTX	
ZWS50BAF-5 EHP	5	0.67	5	1.0	CT4	F: LOT No.
ZWS50BAF-12 EHP	12	0.67	1.2	4.3	CTJ	G: SERIAL No.
ZWS50BAF-15 EHP	15	0.67	1.5	3.5	CTV	H: DATE CODE (FACTORY, WEEK AND YEAR CODE)
ZWS50BAF-24 EHP	24	0.67	2.4	2.1	CTV	
ZWS50BAF-48 EHP	48	0.67	4.8	1.1	CTW	

BAR CODE (QR)
 MODEL CODE | LOT No. | SERIAL No. | DATE CODE | FACTORY CONTROL CODE

6. BRACKETS IN DOTTED LINES SHOULD NOT APPEAR ON THE FINAL FRONT SEAL.

7. RoHS Compliance :
 Refer to T-L Group Green Procurement Guideline : DL-EMS-010...

A	7	△△△ADD EHP △HFP+ => EHP			
		△△ADD SAFETY MARK			
		△CHANGE MODEL CODE			
D	REV	NEW RELEASE	20.May.10	M.Banba	Y.Akinaga
		CONTENTS	DATE	ENGR	CHK
APPD		SCALE: 4/1			APPD
CHK		UNITS: mm			
ENGR		ANGLE: 3RD ANGLE PROJECTION			

TITLE: ZWS50BAF
 NAME PLATE
 DRAWING No. A247-33-01 - 1/1
 TDK-Lambda

Test item particulars :

Equipment mobility	for building-in
Connection to the mains	not directly connected to the mains
Operating condition	continuous
Access location	N/A
Over voltage category (OVC)	OVC II
Mains supply tolerance (%) or absolute mains supply values	+10%, -10%
Tested for IT power systems	No
IT testing, phase-phase voltage (V)	--
Class of equipment	Not classified
Considered current rating of protective device as part of the building installation (A)	16A (for Europe), 20A (for Canada and USA)
Pollution degree (PD)	PD 2
IP protection class	IP X0
Altitude of operation (m)	<2000 m
Altitude of test laboratory (m)	<1000 m
Mass of equipment (kg)	0.17 (approx.) (except for suffix /A, /L), 0.3 (approx.) (for suffix /A), 0.27 (approx.) (for suffix /L)

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	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 point is used as the decimal separator.

Manufacturer's Declaration per Sub Clause 4.2.5 of IEC 60950-1:

Yes

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

When differences exist, they shall be identified in the General Product Information section.

Name and address of Factory(ies): WUXI TDK-LAMBDA ELECTRONICS CO LTD
 NO 6
 XING CHUANG ER LU
 WUXI
 JIANGSU 214028 CHINA

TDK-LAMBDA MALAYSIA SDN BHD
PLO33 KAWASAN PERINDUSTRIAN SENAI
81400 SENAI MALAYSIA

TDK-LAMBDA MALAYSIA SDN BHD
LOT 2 & 3, BATU 9 3/4
KAWASAN PERINDUSTRIAN
BANDAR BARU JAYA GADING
26070 KUANTAN MALAYSIA

TDK-LAMBDA CORP
2704-1 SETTAYA-MACHI
NAGAOKA-SHI
NIIGATA-KEN 940-1195 JAPAN

ZHANGJIAGANG HUA YANG ELECTRONICS CO
LTD
TONGXIN RD
ZHAOFENG ECONOMIC DEVELOPMENT ZONE
LEYU TOWN
ZHANGJIAGANG JIANGSU 215622 CHINA

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

GENERAL PRODUCT INFORMATION:

Report Summary

The original report was modified on 2015-12-18 to include the following changes/additions:
This Test Report is only valid in conjunction with CB Test Report Ref. No. E122103-A172-CB-1 for the following amendment.

Amendment 1:

- Correction of typo in Table 1.5.1.

No tests were considered necessary because construction was not changed.

Product Description

The product is a switching power supply intended for building in to an ITE end product.

Model Differences

All models are identical except for input rating of Model ZWS50BAF-3, output ratings, and the following suffixes:

ZWS50BAF-abcd:

a = 3, 5, 12, 15, 24, 48. b = "/" or blank. c = A, L or blank. d = CO2, FG, FV or blank.

A: Addition of L shaped metal chassis mounted solder side of unit and cover.

CO2: Coating on both sides of PWB (not relied upon to reduce spacings).

FG: Low leakage option.

FV: Fixed output voltage without adjustment.

L: Addition of L shaped metal chassis mounted solder side of unit.

Additional Information

This report is a reissue of CBTR Ref. No.: JPTUV-045764 and JPTUV-045764-M1, CB Test Certificate Ref. No.12027795 001 and 12027795 002. 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

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: Maximum 70°C. See Enclosed Id. 7-02 for details.
- 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 following Production-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-SELV: 363 Vrms, 605 Vpk
- The following secondary output circuits are SELV: Outputs: 3.3 Vdc, 5 Vdc, 12 Vdc, 15 Vdc, 24 Vdc, and 48 Vdc
- The following secondary output circuits are at non-hazardous energy levels: Outputs: 3.3 Vdc, 5 Vdc, 12 Vdc, 15 Vdc, 24 Vdc, and 48 Vdc
- The power supply terminals and/or connectors are: Suitable for factory wiring 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: Required
- The following input terminals/connectors must be connected to the end-product supply neutral: Connector (CN1) (N) pin
- 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), L1 (105°C), L4 (120°C) and L5 (120°C)
- The following end-product enclosures are required: Fire and 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)