Test Report issued under the responsibility of:

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

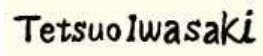
Report Reference No ..... :	4787190432-1
Date of issue ..... :	2015-12-15
Total number of pages ..... :	12
CB Testing Laboratory ..... :	UL Japan, Inc.
Address ..... :	4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan
Applicant's name ..... :	TDK-LAMBDA CORP
Address ..... :	NAGAOKA TECHNICAL CENTER R&D 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

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 ..... :	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 ..... :	ZWS100BAF-abcde a = 3, 5, 12, 15, 24, 36, 48. b = "/" or blank. c = R or blank. d = A, L or blank. e = CO2, FG, FV or blank
Ratings ..... :	Input: AC 100-240V, 50/60Hz, 1.0A (for models of a = 3) 1.3A (other than models of a = 3) Output: DC3.3V, 20A ZWS100BAF-3 (DC 2.64V – 3.63V, max. 20A, max. 66.0W) DC5V, 20A ZWS100BAF-5 (DC 4.0 – 5.5V, max. 20A, max. 100W) DC12V, 8.5A ZWS100BAF-12 (DC 9.6 – 13.2V, max. 8.5A, max. 102W) DC15V, 6.7A ZWS100BAF-15 (DC 12.0 – 16.5V, max. 6.7A, max. 100.5W) DC24V, 4.3A ZWS100BAF-24 (DC 19.2 – 26.4V, max. 4.3A, max. 103.2W) DC36V, 2.8A ZWS100BAF-36 (DC 32.4 – 39.6V, max. 2.8A, max. 100.8W) DC48V, 2.1A ZWS100BAF-48 (DC 38.4 – 52.8V, max. 2.1A, max. 100.8W) Output voltage of parenthesis can be changed with the adjustable variable resistor (VR51) within the range.

Testing procedure and testing location:		
[X]	**CB Testing Laboratory**	
	Testing location / address ..... :	UL Japan, Inc. 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan
[ ]	**Associated CB Test Laboratory**	
	Testing location / address ..... :	
	Tested by (name + signature) ..... :	Ayano Matsumoto 
	Approved by (name + signature)... :	Tetsuo Iwasaki 
[ ]	**Testing Procedure: TMP/CTF Stage 1**	
	Testing location / address ..... :	
	Tested by (name + signature) ..... :	
	Approved by (name + signature)... :	
[ ]	**Testing Procedure: WMT/CTF Stage 2**	
	Testing location / address ..... :	
	Tested by (name + signature) ..... :	
	Witnessed by (name + signature).. :	
	Approved by (name + signature)... :	
[ ]	**Testing Procedure: SMT/CTF Stage 3 or 4**	
	Testing location / address ..... :	
	Tested by (name + signature) ..... :	
	Approved by (name + signature)... :	
	Supervised by (name + signature). :	
[ ]	**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.

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 - 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 .....:	N/A
Over voltage category (OVC) .....:	OVC II
Mains supply tolerance (%) or absolute mains supply values .....:	±10%
Tested for IT power systems .....:	No
IT testing, phase-phase voltage (V) .....:	N/A
Class of equipment .....:	Not classified, class I construction
Considered current rating of protective device as part of the building installation (A) .....:	20A
Pollution degree (PD) .....:	PD 2
IP protection class .....:	Not rated.
Altitude of operation (m) .....:	≤ 2000m
Altitude of test laboratory (m) .....:	< 1000m
Mass of equipment (kg) .....:	Approx. 0.3kg (except for suffix /A, /L) Approx. 0.47kg (suffix /A) Approx. 0.43kg (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 IECEE 02:

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 CORP 2704-1 SETTAYA-MACHI NAGAOKA-SHI NIIGATA-KEN 940-1195 JAPAN 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 Wuxi TDK-Lambda Electronics Co Ltd NO 6 XING CHUANG ER LU WUXI JIANGSU 214028 CHINA ALPS LOGISTICS FACILITIES CO LTD 593-1 NISHIOOHASHI TSUKUBA-SHI IBARAKI-KEN 305-0831 JAPAN ZHANGJIAGANG HUA YANG ELECTRONICS CO LTD TONGXIN RD ZHAOFENG ECONOMIC DEVELOPMENT ZONE LEYU TOWN ZHANGJIAGANG JIANGSU 215622 CHINA

GENERAL PRODUCT INFORMATION:

Report Summary

This report is only valid in conjunction with CB Test Report Ref. No. 4786910622-6, dated 2015-08-03 for the following amendment.

Amendment 1:
- Minor modifications of description 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 end product.

Model Differences

Model : ZWS100BAF-abcde
(a = 3, 5, 12, 15, 24, 36, 48. b = "/" or blank. c= R or blank. d = A, L or blank. e = CO2, FG, FV or blank)
a: output voltage as above

b: (separator)
c: R = remote ON/OFF control function.
d: A = L shaped metal chassis and cover.
L = L shaped metal chassis mounted solder side of unit.
e: CO2 = coating on both side of PCB.
FG = low leakage.
FV = fixed output voltage without adjustable volume.

Additional Information

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 (Tma) permitted by the manufacturer's specification of: For Model Series ZWS100BAF with all suffixes except /A: , 100% load @ 30°C ambient for Mounting position D, F with convection cooling;, 100% load @ 40°C ambient for Mounting positions C, E with convection cooling; , 100% load @ 50°C ambient for Mounting positions A, B with convection cooling; , See Enclosure Miscellaneous ID 7-01 for complete Output Derating Curves. , , For Model Series ZWS100BAF with suffix /A: , 100% load @ 20°C ambient for Mounting position D, F with convection cooling;, 100% load @ 30°C ambient for Mounting positions C, E with convection cooling; , 100% load @ 40°C ambient for Mounting positions A, B with convection cooling; , See Enclosure Miscellaneous ID 7-01 and 7-02 for complete Output Derating Curves. , , Repeat of Heating test should be considered in the end product application.

- 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: 579 Vpk

- The following secondary output circuits are SELV: All output

- The following secondary output circuits are at non-hazardous energy levels: All output

- 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
- An investigation of the protective bonding terminals has: 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): T2 (Class F)
- The following end-product enclosures are required: Electrical, Fire

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)