Test Report issued under the responsibility of:

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

Report Reference No ..... :	4786910624-5
Date of issue ..... :	2015-09-16
Total number of pages ..... :	147
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 or 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	:	RTWx-y (RTW100W series) RTWx-y# (RTW100W series) RTWx-y* (RTW100W series) (see “Model Differences “ for detail)
Ratings	:	Input: AC 100-240 V, 50-60 Hz, 1.1 - 0.55A (3V output type) AC 100-240 V, 50-60 Hz, 1.5 - 0.75A (others) Output: See “Model Difference”.

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	A. Matsumoto
	Approved by (name + signature)....	Tetsuo Iwasaki	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 (24 pages)
Enclosures (57 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)	
SELV Reliability Test Including Hazardous Voltage Measurements (2.2.2, 2.2.3, 2.2.4)	
Protective Bonding I (2.6.3.4, 2.6.1)	
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)	
Power Supply Output Short-Circuit/Overload (5.3.7)	
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	

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) ..... :	Considered for 16A
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. 0.3kg
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 ..... :	2008-07-01 – 2008-09-19
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 ..... When differences exist, they shall be identified in the General Product Information section.	Yes
Name and address of Factory(ies):	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

ALPS LOGISTICS FACILITIES CO LTD
593-1 NISHIOOHASHI
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

Built- in type switching power supply for use in general office equipment (host equipment is not specified).

Model Differences

The models are essentially the same except for the rating, switching transformer, secondary circuits not affecting safety (see below):

RTWx-y, RTWx-y# or RTWx-y*

x = 1 to 3 digit number (0-9) which may include a period indicating the Rated Output Voltage within the ranges shown in Table 1.
y = 1 to 3 digit number (0-9) which may include a period or the letter R and which may be followed by the letter K indicating the Rated Output Current according to the limits shown in Table 1
# = A, B, D, J, L, M or U indicating various options, option combinations and future unspecified options not affecting safety.
* = C, E, G, H, N, S, T or V indicating various options, option combinations and future unspecified options not affecting safety.

Cover installation:

Models designated RTWx-y and RTWx-y# are not equipped with a cover.
Models designated RTWx-y* are equipped with a cover.

Differences between Output Voltage Types A, B, C, D, E, F and G:

Transformer (T3)

Installation or non-installation of secondary components for adjusting the Output Voltage Ratings:

Output type	Input current	Output	Transformer T3
A	0.6 – 0.3A	DC 2.6-4.0V , 12.5A max, 41.25W max	SRW2014PQ-T01V015
B	0.7 – 0.35A	DC 4.0-5.8V, 10A max, 50W max	SRW2014PQ-T01V015
C	0.7 – 0.35A	DC 9.6-13.2V, 4.3A max, 51.6W max	SRW2014PQ-T02V015
D	0.7 – 0.35A	DC 12.0-16.5V, 3.5A max, 52.5W max	SRW2014PQ-T10V015
E	0.7 – 0.35A	DC 19.2-26.4V, 2.2A max, 52.8W max	SRW2014PQ-T03V014
F	0.7 – 0.35A	DC 22.4-30.8V, 1.8A max, 50.4W max	SRW2014PQ-T11V014
G	0.7 – 0.35A	DC 38.4-52.8V, 1.1A max, 52.8W max	SRW2014PQ-T04V014

Voltage adjustments within the respective voltage ranges of Types A, B, C, D, E, F, G are made by means of voltage adjusting components within the secondary circuit.

Terminal Block:

Suffix “L” models: 3JT1AG092 (L-shaped terminal)
Other models: 3JT0AG092

Examples of the relationship between Type Designation and Power Supply characteristics:

RTW03-12R
Output Voltage: DC 3V
Output Current: 12A
Cover: Not equipped
Terminal: Normal

RTW48-1R1C
Output Voltage: DC 48V
Output Current: 1.1A
Cover: Equipped
Terminal: Normal

RTW24-2R2L
Output Voltage: DC 24V
Output Current: 2.2A
Cover: Not equipped
Terminal: L-shaped

RTW03-12RH
Output Voltage: DC 3V
Output Current: 12A
Cover: Equipped
Terminal: L-Shaped

RTW12-4R3L
Output Voltage: DC 12V
Output Current: 4.3A
Cover: Not equipped
Terminal: L-shaped

RTW03-12B
Output Voltage: DC 3V
Output Current: 12A
Cover: Not equipped
Terminal: Normal

Additional Information

This report is a reissue of CBTR Ref. No.:12027297 001, CB Test Certificate Ref. No.JPTUV-048722. 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.

Sample Received date is 2003-08-11.
Construction review was conducted on 2003-08-11.

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 (Tma) permitted by the manufacturer's specification of: 50°C (models without cover), 40°C (models with cover)
- The product is intended for use on the following power systems: TN, IT (for Norway)
- 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 Vrms, 517 Vpk
- 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): T2 (Class B), T3 (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)