Test Report issued under the responsibility of:

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

Report Reference No ..... :	4786910622-5
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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

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, LAMBDA DENSEI-LAMBDA or NEMIC-LAMBDA
Manufacturer ..... :	TDK-LAMBDA CORP NAGAOKA TECHNICAL CENTER R&D DIV 2704-1 SETTAYA-MACHI NAGAOKA-SHI NIIGATA 940-1195 JAPAN
Model/Type reference ..... :	JWS150-abcd,JWS150-24/508 (series name:JWS150 series) a=3,5,12,15,24,28,48 b="/",/ARTV,/TSK,/AGE or blank c=R or blank d=A or blank JWS120P-v,JWS120P-24/508 (series name:JWS120P series) v=24,48
Ratings ..... :	Input: AC 100-240V,50/60Hz, 1.6A for model JWS150-3bcd, 2.1A for the other models of JWS150 series, 1.6A for JWS120P series Output: model JWS150-3bcd DC3.3V, 30A model JWS150-5bcd DC5V, 30A model JWS150-12bcd DC12V, 13A model JWS150-15bcd DC15V, 10A model JWS150-24bcd DC24V, 6.5A model JWS150-24/508 DC24V, 6.5A model JWS150-28bcd DC28V, 5.5A model JWS150-48bcd DC48V, 3.3A model JWS120P-24 DC24V, 5A model JWS120P-24/508 DC24V, 5A model JWS120P-48 DC48V, 2.5A

Testing procedure and testing location:		
[ ]	**CB Testing Laboratory**	
	Testing location / address ..... :	
[ ]	**Associated CB Test Laboratory**	
	Testing location / address ..... :	
	Tested by (name + signature) ..... :	
	Approved by (name + signature).... :	
[x]	**Testing Procedure: TMP/CTF Stage 1**	
	Testing location / address ..... :	TDK-LAMBDA CORPORATION, NAGAOKA TECHNICAL CENTER 2704-1 SETTAYA-MACHI, NAGAOKA-SHI, NIIGATA-KEN, 940-1195 JAPAN
	Tested by (name + signature) ..... :	Ayano Matsumoto A. Matsumoto
	Approved by (name + signature).... :	Tetsuo Iwasaki Tetsuo Iwasaki
[ ]	**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 (22 pages)
Enclosures (36 pages)

Summary Of Testing

Unless otherwise indicated, all tests were conducted at TDK-LAMBDA CORPORATION, NAGAOKA TECHNICAL CENTER, 2704-1 SETTAYA-MACHI, NAGAOKA-SHI, NIIGATA-KEN, 940-1195 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)	
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, KR, SE, SI, US	
The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013	

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	:	Yes
IT testing, phase-phase voltage (V)	:	230V (for Norway)
Class of equipment	:	Not classified (class I construction)
Considered current rating of protective device as part of the building installation (A)	:	B/I
Pollution degree (PD)	:	PD 2
IP protection class	:	IP X0
Altitude of operation (m)	:	≤ 2000 m
Altitude of test laboratory (m)	:	< 1000m
Mass of equipment (kg)	:	0.84kg
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	:	2009-02
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 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

ALPS LOGISTICS FACILITIES CO LTD
593-1 NISHIOOHASHI
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1010 HABUSHIN
NANTO-SHI
TOYAMA-KEN 939-1756 JAPAN

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

GENERAL PRODUCT INFORMATION:

Report Summary

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

Product Description

The product covered in this report is building-in type switching power supply with a single output circuit.

Model Differences

JWS150 series are identical each other except for model name, rated current, output rating, winding of Transformer T1, PWB layout and minor secondary components.

Models JWS150-24bcd and JWS 150-24/508 have different PWB layout from the others. The separations between primary and secondary or PE are just same as others.

Model JWS120P series is identical model JWS150 series except for max. power and as follows:
Fuse F1, Inductors L1, L2 and L3, and Thermostat TS1. See Table 1.5.1 for details.

Models JWS150-24/508 is identical to models JWS150-24/A and JWS120P-24 respectively except for Terminal Block TB1.

Variable	Range of variable	Content
a	3, 5, 12, 15, 24, 28, 48	Output voltage for model JWS150-abcd
v	24, 48	Output voltage for model JWS120P-v
b	"/", /ARTV, /TSK, /AGE or blank	"/": separator ARTV: provided with cover in combination with some components additionally fixed by silicone rubber TSK : provided with alternate cover (190.5 mm long) AGE: provided with cover and special suffix for special customer.
c	R or blank	R: provided with remote control circuits and optocoupler PC3
d	A or blank	A: provided with cover (179.8 mm long).

Note;
1) b = c = d = blank: basic model
2) Different type of terminal block used for models JWS150-24/508 and JWS120P-24/508.

Additional Information

This report is a reissue of CBTR Ref. No.: 12027285 001,12027285 002 and 12027285 003 CB Test Certificate Ref. No.JPTUV-045057, JPTUV-045057-A1 and JPTUV-045057-A1/M1. 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 2006-07-14.
Construction review was conducted on 2006-07-26.

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: 50°C at 100% load with cover, 60°C at 60% load with cover.

- 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: 712 Vpk
- The following secondary output circuits are SELV: All output
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- 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 F)
- 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)