Test Report issued under the responsibility of:

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

Report Reference No ..... :	4787989180
Date of issue ..... :	2017-05-23
Total number of pages ..... :	9
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 ..... :	1) CN100A24-xyza 2) CN50A24-xyza (x = 5, 12, 15, 24 denotes output voltage, y = "/" or blank, z = "LT", "CO", "LTCO" or blank, a = "T" or blank)
Ratings ..... :	Input: 1) 14.4-36Vdc, 11.0A 2) 14.4-36Vdc, 5.5A Output: 1) 5Vdc, 20A 2) 5Vdc, 10A 12Vdc, 8.4A 12Vdc, 4.2A 15Vdc, 6.7A 15Vdc, 3.4A 24Vdc, 4.2A 24Vdc, 2.1A

Testing procedure and testing location:			
[x]	**CB Testing Laboratory**	UL Japan, Inc. 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan	
	Testing location / address ..... :		
[ ]	**Associated CB Test Laboratory**		
	Testing location / address ..... :		
	Tested by (name + signature) ..... :	Ayano Matsumoto, Project Handler	A. Matsumoto
	Approved by (name + signature)... :	Tetsuo Iwasaki, Reviewer	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 (2 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: AR, AT, AU, BE, BY, CA, CH, CN, CZ, DE, DK, ES, EU, FI, FR, GB, HU, IL, IT, JP, KR, MY, NL, NO, NZ, PL, RS, RU, SA, SE, SG, SI, SK, TR, UA, 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 .....:	N/A
Tested for IT power systems .....:	No
IT testing, phase-phase voltage (V) .....:	N/A
Class of equipment .....:	Not classified
Considered current rating of protective device as part of the building installation (A) .....:	N/A
Pollution degree (PD) .....:	PD 2
IP protection class .....:	Not rated, indoor use only
Altitude of operation (m) .....:	≤ 2000 m
Altitude of test laboratory (m) .....:	< 2000 m
Mass of equipment (kg) .....:	0.1 (approx.)
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 ..... 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

WUXI TDK-LAMBDA ELECTRONICS CO LTD
NO 6 XING CHUANG ER LU
WUXI
JIANGSU 214028 CHINA

GENERAL PRODUCT INFORMATION:

Report Summary

This report is only valid in conjunction with CB Test Report Ref. No. 4786910624-1, including CB Test Report Ref. No. 4787853163 (Amendment 1).

Amendment 2 covers following modification:

- Addition of Model with suffix ”T”.
- Revise definition of suffix for Model Name
  [From] x = 5, 12, 15, 24 for output voltage, y = / or blank, z = LT, CO, LTCO or blank
  [To] x = 5, 12, 15, 24 denotes output voltage, y = “/” or blank, z = “LT”, “CO”, “LTCO” or blank, a = “T” or blank

No tests were considered necessary on models with suffix "T" because of similarity in construction to previously evaluated units.

Product Description

The product tested is built-in type DC-DC Switching Power supply for use in office environment.

Access to the product by operator shall be prevented by final application.

Aluminum base single layer PCB plate is used for mounting power components and external heatsink. In order to maintain SELV output, the baseplate must be protectively earthed by final application.

The product has been assessed under the assumption that the d.c. input is not isolated from a.c. mains up to 115Vac. For d.c. input derived from a.c. mains above 115Vac up to 250Vac, suitable isolation shall be provided by final application.

Installation requires following external components.
- Input Fuse, rated 250V, 15A (for CN100A24-x, CN100A24-x/LT), rated 250V, 8A (for CN50A24-x, CN50A24-x/LT)

- Electrolytic Capacitor(s) for the rectifying circuits of primary
- Smoothing electrolytic capacitor(s) for output circuits
- Heatsink (to be secured on the product)

Relevant tests were performed in the most severe condition allowed by the installation instruction.
The outputs were operated at rated load.

Model Differences

Function \ Model	CN100A24-5 CN100A24-5/LT	CN100A24-12 CN100A24-12/LT	CN100A24-15 CN100A24-15/LT	CN100A24-24 CN100A24-24/LT
Output Voltage / Current	5Vdc / 20A	12Vdc / 8.4A,	15Vdc / 6.7A	24Vdc / 4.2A
Output Voltage range	-10%, +20% (4.5Vdc – 6Vdc)	±10%(10.8Vdc – 13.2Vdc)	±10% (13.5Vdc – 16.5Vdc)	±10% (21.6Vdc – 26.4Vdc)
Main Transformer (reinforced)	T102 with control winding of FET	T102	T102	T102
Control Transformer (reinforced)	T1	--	--	--
Max. output power	100W	100.8W	100.5W	100.8W

Function \ Model	CN50A24-5 CN50A24-5/LT	CN50A24-12 CN50A24-12/LT	CN50A24-15 CN50A24-15/LT	CN50A24-24 CN50A24-24/LT
Output Voltage / Current	5Vdc / 10A	12Vdc / 4.2A,	15Vdc / 3.4A	24Vdc / 2.1A
Output Voltage range	-10%, +20% (4.5Vdc – 6Vdc)	±10%(10.8Vdc – 13.2Vdc)	±10% (13.5Vdc – 16.5Vdc)	±10% (21.6Vdc – 26.4Vdc)
Main Transformer (reinforced)	T102 with control winding of FET	T102	T102	T102
Control Transformer (reinforced)	T1	--	--	--
Max. output power	50W	50.4W	51W	50.4W

Differences between the models with and without the suffix ' /LT'
They are identical except for followings.
- model name
- inductors (L1, L2).
- pattern layout for Inductors (L1, L2)

Definition of variable(s):

Variable:	Range of variable:	Content:

x	5, 12, 15, 24	Output voltage
y	/ or blank	Separator
z	LT, CO, LTCO or blank	LT: Inductors (L1, L2), type LQH32PN101MN0L provided instead of type CY3H-101-DLS. Pattern layout for Inductors is also different. CO: PCBs coated with “Humi Seal 1B58LU-60” LTCO: “LT” + “CO” (see above)
a	T or blank	T: No threads in the corner.

Additional Information

Abbreviations used in the report.
- built-in application: B/I

In addition, following National Differences were considered:
- Russian Federation (RU)**,
- Turkey (TR)**.
- Serbia (RS)**

Note) **: Only Group Differences.

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer’s specification of: 100°C at the baseplate PCB
- 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: 288Vpeak, 75Vrms (pri-sec, for CN100A24)
- 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 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)