Test Report issued under the responsibility of:

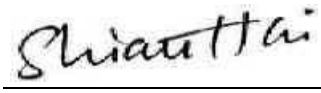
UL International Demko A/S

TEST REPORT
IEC 60950-1:2005 (2nd Edition)
Information technology equipment - Safety - Part 1: General requirements

Report Reference No ..... :	E252373-A19-CB-2
Date of issue ..... :	2009-07-06
Total number of pages ..... :	151
CB Testing Laboratory ..... :	UL International Demko A/S
Address ..... :	Lyskaer 8, 2730, Herlev, Denmark
Applicant's name ..... :	TDK-LAMBDA SINGAPORE PTE LTD
Address ..... :	#06-01/08 1008 TOA PAYOH NORTH SINGAPORE 318996 SINGAPORE
Test specification:	
Standard ..... :	IEC 60950-1:2005, Second Edition
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IECEN60950_1C
Test Report Form originator ..... :	SGS Fimko Ltd
Master TRF ..... :	2006-06

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.

Test item description ..... :	Switching Power Supply for building-in
Trade Mark ..... :	TDK·Lambda
Model/Type reference ..... :	LS35-X /YYYYYY, where X can be 3.3, 5, 7,12, 15, 18, 24, 28, 36, 40, 48, or 56 and /YYYYYY can be /B, /BCO, /BCO2, /BCOL, /BCO2L, /BM, /BMCO, /BMCO2, /BMCOL, /BMCO2L, /BL, /BML, /CO, /CO2, /COL, /CO2L, /L or blank.
Manufacturer ..... :	TDK-LAMBDA SINGAPORE PTE LTD #06-01/08 1008 TOA PAYOH NORTH SINGAPORE 318996 SINGAPORE
Rating ..... :	Input: 100-240 V ac, 0.8 A, 50/60 Hz Output: LS35-3.3: 3.3 V dc, 7 A; LS35-5: 5 V dc, 7 A; LS35-7: 7 V dc, 5 A; LS35-12: 12 V dc, 3 A; LS35-15: 15 V dc, 2.4 A; LS35-18: 18 V dc, 2 A; LS35-24: 24 V dc, 1.5 A; LS35-28: 28 V dc, 1.3 A; LS35-36: 36 V dc, 1 A; LS35-40: 40 V dc, 0.9 A; LS35-48: 48 V dc, 0.8 A; LS35-56: 56 V dc, 0.7.

Testing procedure and testing location:			
[ ]	**CB Testing Laboratory**		
	Testing location / address..... :		
[ ]	**Associated CB Test Laboratory**		
	Testing location / address..... :		
	Tested by (name + signature) ..... :		
	Approved by (+ signature) ..... :		
[x]	**Testing Procedure: TMP**		
	Tested by (name + signature) ..... :	Chiang Shiau Hui	
	Approved by (+ signature) ..... :	Royston Ng	
	Testing location / address..... :	TDK-LAMBDA SINGAPORE PTE LTD, #06-01/08, 1008 TOA PAYOH NORTH, SINGAPORE 318996 SINGAPORE	
[ ]	**Testing Procedure: WMT**		
	Tested by (name + signature) ..... :		
	Witnessed by (+ signature)..... :		
	Approved by (+ signature) ..... :		
	Testing location / address..... :		
[ ]	**Testing Procedure: SMT**		
	Tested by (name + signature) ..... :		
	Approved by (+ signature) ..... :		
	Supervised by (+ signature) ..... :		
	Testing location / address..... :		
[ ]	**Testing Procedure: RMT**		
	Tested by (name + signature) ..... :		
	Approved by (+ signature) ..... :		
	Supervised by (+ signature) ..... :		
	Testing location / address..... :		

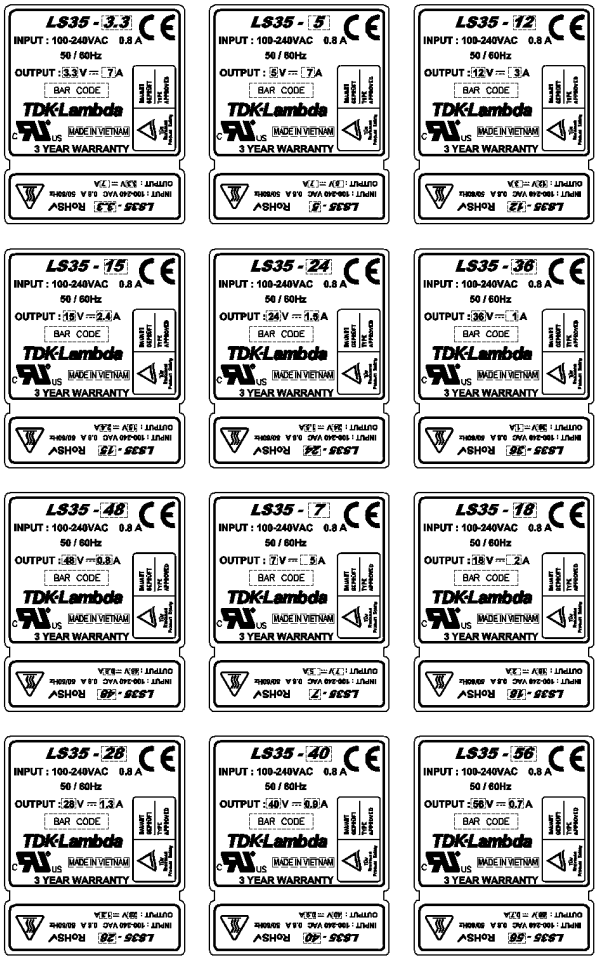
Summary of Testing:
Unless otherwise indicated, all tests were conducted at TDK-LAMBDA SINGAPORE PTE LTD, #06-01/08, 1008 TOA PAYOH NORTH, SINGAPORE 318996 SINGAPORE.

Tests performed (name of test and test clause)	Testing location / Comments
End Product Reference Page	
General Guidelines	
Power Supply Reference Page	
Input: Single-Phase (1.6.2)	
Transformer and Wire /Insulation Electric Strength (2.10.5.6, 2.10.5.13)	
Heating (4.5.1, 1.4.12, 1.4.13)	
Ball Pressure (4.5.5, 4.5)	

Summary of Compliance with National Differences:

AT, BE, CA, CH, CZ, DE, DK, EU, FI, FR, GB, GR, HU, IT, JP, KR, NL, NO, PL, SE, SI, SK, US

Copy of Marking Plate



Test item particulars :	
Equipment mobility ..... :	for building-in
Connection to the mains ..... :	N/A
Operating condition ..... :	continuous
Over voltage category ..... :	OVC II
Mains supply tolerance (%) ..... :	+10%, -10%
Tested for IT power systems ..... :	No
IT testing, phase-phase voltage (V) ..... :	N/A
Class of equipment ..... :	Class I (earthed)
Mass of equipment (kg) ..... :	< 18 (0.26kg)
Pollution degree ..... :	PD 2
IP protection class ..... :	IP X0
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 ..... :	2009-05-13
Date(s) of Performance of tests ..... :	2009-05-14 to 2009-05-26

General remarks:

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 testing laboratory.

"(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.

Refer to the Cover Page For Test Report for a list of all Factory Locations.

GENERAL PRODUCT INFORMATION:

Report Summary

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

Product Description

Electronic components mounted on PWB and housed with metal enclosure.

Model Differences

All Models are similar to each other, except the following:-
a) Output rating;
b) Transformer (T1) Primary and Secondary winding;
c) Model designation.

LS35-X /YYYYYY, where X can be 3.3, 5, 7, 12, 15, 18, 24, 28, 36, 40, 48, or 56. And /YYYYYY can be /B, /BCO, /BCO2, /BCOL, /BCO2L, /BM, /BMCO, /BMCO2, /BMCOL, /BMCO2L, /BL, /BML, /CO, /CO2, /COL, /CO2L, /L or blank.

1) B => Input Connector (CN1) and Ouput connector (CN2) are from JST;
2) BM => Input Connector (CN1) and Ouput connector (CN2) are from Molex;
3) CO => PCB with one (1) side coating;
4) CO2 => PCB with two (2) sides coating;
5) L => Open frame (Cover removed);
6) blank => Input connector and output connector using terminal block TB1;

Additional Information

PWB type A and type B is differenced by type of input connector used. PWB type A is using terminal block TB1, and PWB type B is using connector CN1. (See table 1.5.1 for connectors details).

The tests are based on +10% and -10% tolerence and considered in compliance with +6% and -10% tolerence.

The label is a draft of an artwork for marking plate pending approval by National Certification Bodies and it shall not be affixed to products prior to such an approval.

This test report shall be read in conjunction with the original report, number:

E252373-A19-CB-1, issued 2009-01-07 with CB Certificate No. (DK-14897), issued 2009-01-09.

This report has been reissued due to:
1) Upgrade standard to IEC 60950-1:2005 Second Edition
2) Alternate source for L1. P/N: JLB20802, Shenzhen Jewel.
3) Alternate source for TB1. P/N: DT-49, Dinkle Enterprise
4) Alternate source for T1. P/N: A09-0055 - A09-0061, AXIS
5) Alternate source for CN1. P/N: 41791, Molex Incorporated

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

The product is intended for use on the following power systems: TN

The product was investigated to the following additional standards: IEC 60950-1 Second Edition & EN 60950-1:2006 (which includes all European national differences, including those specified in this test report).

The following accessible locations (with circuit/schematic designation) are within a limited current circuit: Secondary side of C36,

The following were investigated as part of the protective earthing/bonding: Printed wiring board trace (refer to Enclosure, Miscellaneous 7-02),

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, Earthing Continuity

The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-SELV: 251.024 Vrms, 520.833 Vpk, Primary-Earthed Dead Metal: 237.182 Vrms,

The following secondary output circuits are SELV: LS35-3.3: 3.3 V dc; LS35-5: 5 V dc; LS35-7: 7 V dc; LS35-12: 12 V dc; LS35-15: 15 V dc; LS35-18: 18 V dc; LS35-24: 24 V dc; LS35-28: 28 V dc; LS35-36: 36 V dc; LS35-40: 40 V dc; LS35-48: 48 V dc; LS35-56: 56 V dc.,

The following secondary output circuits are at non-hazardous energy levels: LS35-3.3: 3.3 V dc; LS35-5: 5 V dc; LS35-7: 7 V dc; LS35-12: 12 V dc; LS35-15: 15 V dc; LS35-18: 18 V dc; LS35-24: 24 V dc; LS35-28: 28 V dc; LS35-36: 36 V dc; LS35-40: 40 V dc; LS35-48: 48 V dc; LS35-56: 56 V dc.,

The following secondary output circuits are Limited Current Circuits: Secondary side of C36

The following output terminals were referenced to earth during performance testing: T1 Pin 6, 7

The power supply terminals and/or connectors are: All models 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 input terminals/connectors must be connected to the end-product supply neutral: For model LS35-X /YYYYYY, TB1 pin 2 or CN1 pin 2.

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): LS35-3.3, LS35-12, LS35-15, LS35-18, LS35-24, LS35-28, LS35-36, LS35-40: T1 (Class B); LS35-5, LS35-7, LS35-48; LS35-56: T1 (Class F)

The following end-product enclosures are required: Fire, Mechanical, Electrical

Power Supply Unit only evaluated at flat (bottom) on horizontal position for all test.