Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT

IEC 60950-1: 2005 (2nd Edition) and/or EN 60950-1:2006
Information technology equipment – Safety –
Part 1: General requirements

Report Reference No. ..... :	12020849 001
Date of issue ..... :	2010-05-07
Total number of pages	53
CB/CCA Testing Laboratory ..... :	TÜV Rheinland Japan Ltd., Yokohama Laboratory
Address ..... :	4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan
Applicant's name ..... :	TDK-Lambda Corp. Nagaoka Technical Center
Address ..... :	2701 Togawa, Settaya Nagaoka-shi, Niigata 940-1195 Japan
Manufacturer's name ..... :	(same as Applicant)
Address ..... :	(same as Applicant)
Factory's name ..... :	1. TDK-Lambda Malaysia Sdn. Bhd.
Address ..... :	PL033, Kawasan Perindustrian, 81400 Senai Johor, Malaysia
	2. TDK-Lambda Malaysia Sdn. Bhd.
	Lot 2 & 3, Batu 9 3/4 Kawasan Perindustrian Bandar Baru Jaya Gading 26070 Kuantan Pahang, Malaysia
	3. TDK-Lambda Facilities Corp.
	36-1 Kasuminosato, Ami-machi, Inashiki-gun, Ibaraki 300-0396, Japan
	4. Atsumi Tsushinki Co., Ltd.
	1 Kanoe, Oguni Tsuruoka-shi, Yamagata 999-7316 Japan
Test specification:	
Standard ..... :	☒ IEC 60950-1:2005 (2nd Edition) and/or ☒ EN 60950-1:2006
Test procedure ..... :	CB–scheme
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IECEN60950_1C
Test Report Form(s) Originator ..... :	SGS Fimko Ltd
Master TRF ..... :	Dated 2007-06

Copyright © 2006 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.
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.

If this Test Report Form is used by non-CCA members, the CIG logo and the reference to the CCA Procedure shall be removed.
This report is not valid as a CCA Test Report unless signed by an approved CCA Testing Laboratory and appended to a CCA Test Certificate issued by an NCB in accordance with CCA

Test item description.....:	Switching Power Supply (built-in application)	
Trade Mark .....:	TDK, TDK·Lambda or TDK·Lambda	
Manufacturer.....:	(same as Applicant)	
Model/Type reference.....:	MTW15-y#* (y = 51212 or 51515, # = "-" or blank, * = 0-9, A-Z or blank)	
Ratings.....:	Input:	AC 100-240V, 50-60Hz, 0.45-0.25A
	Output: MTW15-51212#*:	+5Vdc/2.0A (3.0A peak), +12Vdc/0.3A (0.6A peak), -12Vdc/0.2A (0.3A peak), total max. output power: 16W
	MTW15-51515#*:	+5Vdc/2.0A (3.0A peak), +15Vdc/0.3A (0.6A peak), -15Vdc/0.2A (0.3A peak), total max. output power: 17.5W
	Load is for 10 seconds maximum. Total power does not exceed the max. power during peak load	

Testing procedure and testing location:	
CB/CCA Testing Laboratory .....:	TÜV Rheinland Japan Ltd., Yokohama Laboratory
Address.....:	4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan
☐ **Associated CB Laboratory:**	
Testing location/ address..... :	TÜV Rheinland Japan Ltd., Yokohama Laboratory 4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan
Tested by (name + signature)..... :	M. Kera
Approved by (+ signature)..... :	K. Sato
☐ Testing procedure: TMP	
Tested by (name + signature)..... :	
Approved by (+ signature)..... :	
Testing location/ address..... :	
☐ 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:

Test sample(s):

The manufacturer declared that the samples submitted for evaluation were representative of the products from each factory.

This test report is based on test data from the original CB reports 12017921 001.
A sample of the equipment was subject of a construction check.

The following modifications were done for the models listed on the original CB reports and additionally evaluated by this report.

Modifications:

1. Standard up-date from IEC 60950-1(1st) to IEC 60950-1(2nd):
2. Change of Varistor CR7:
3. Addition of alternate for the following conponents:
   X-Capacitor C1, Y-Capacitor C3, Photo-Coupler IC1
4. Change of manufacturer name and capacitance of capacitor C3
5. Withdrawn of factory, TDK Xiamen Co., Ltd.
6. Address changes of factory Atsumi Tsushinnki Co., Ltd.

No additional tests were necessary.

Tests performed (name of test and test clause): See below.	**Testing location:** (same as CBTL)	
Testing		Applicable (Yes/No)	Comments
Clause	Test description		
1.6.2	Input current	Yes	Tested by the original CB report
2.1.1.5	Energy hazards	No	
2.1.1.7	Discharge of capacitors in primary	Yes	Tested by the original CB report
2.2.2	Hazardous voltage measurement	Yes	Tested by the original CB report
2.2.3	SEL voltage measurement	Yes	Tested by the original CB report
2.3.5	Operating voltages generated externally	No	
2.4.2	Limited current circuits	No	
2.5	Limited power sources	Yes	Tested by the original CB report

2.6.3.4	Resistance of earthing conductors and their terminations	Yes	Tested by the original CB report
2.9.2	Humidity conditioning	Yes	Tested by the original CB report
2.10	Creepage and Clearances, Distance through Insulation	Yes	Tested by the original CB report
2.10.2.2/ 2.10.2.3	Determination of working voltage	Yes	Tested by the original CB report
2.10.5	Solid insulation	Yes	Tested by the original CB report
2.10.7	Enclosed and sealed parts	No	
3.2.6	Cord anchorages and strain relief	No	
4.1	Stability	No	
4.2	Mechanical strength	Yes	Tested by the original CB report
4.3.6	Direct plug-in equipment	No	
4.3.13	Radiation	No	
4.5.2	Maximum Temperatures	Yes	Tested by the original CB report
4.5.5	Resistance to abnormal heat	Yes	Tested by the original CB report
5.1	Touch current and protective conductor current	Yes	Tested by the original CB report
5.2	Electric strength	Yes	Tested by the original CB report
5.3	Abnormal operating and fault conditions	Yes	Tested by the original CB report
6.1.2	Separation of the telecommunication network from earth	No	
6.2	Protection of equipment users from overvoltages on telecom. Networks	No	
6.3	Protection of the telecommunication wiring system from overheating	No	
7.2	Protection of equipment users from overvoltages on cable distribution system	No	
7.3	Insulation between primary and cable distribution system	No	
Annex A	Resistance to heat and fire	No	
Annex B	Locked-rotor overload test	No	

Annex C	Overload test	Yes	Tested by the original CB report
Annex G	Determining minimum clearances	No	
Annex H	Ionizing radiation	No	
Annex K	Thermal controls	No	
Annex M	Criteria for telephone ringing signals	No	
Annex Q	Voltage dependent resistors (VDRs)	No	
Annex U	Insulated wire for use without interleaved insulation	No	
Annex Y	Ultraviolet light conditioning test	No	

Additionally evaluated Test specifications (see appended test report).

EN 60950-1:2006 + A11:2009

Summary of compliance with National Differences:

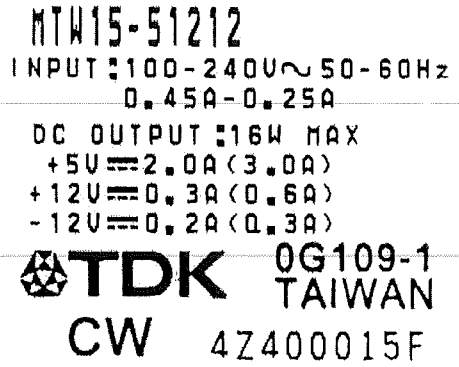
EU Group Differences, EU Special National Conditions, EU A-Deviations, and National Differences AT, AU, CH, DE, DK, FI, FR, GB, IT, KR, NL, NO, PL, SE, SI.

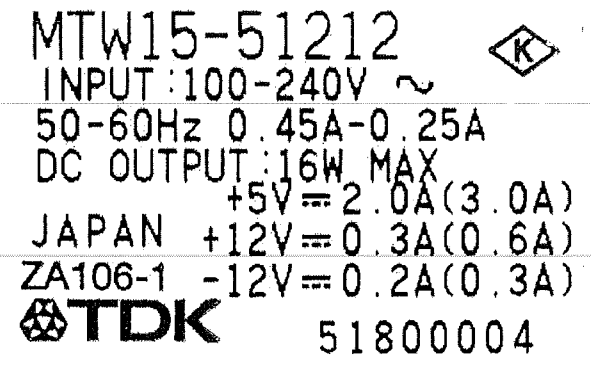
Explanation of used codes: AT=Austria, AU=Australia, CA=Canada, CH=Switzerland, DE=Germany, DK=Denmark, FI=Finland, FR=France, GB=United Kingdom, IT=Italy, KR=Korea, NL=The Netherlands, NO=Norway, PL=Poland, SE=Sweden, SI=Slovenia, US=United States of America.

For National Differences see corresponding Attachment.

Copy of marking plate:

Below rating label* is used for model MTW15-51212. As output rating only output voltage and current are stated.





* Rating labels for the other models are identical to this except for model designation and output ratings.

Test item particulars ..... :	
Equipment mobility ..... :	[] movable [] hand-held [] transportable [] stationary [X] for building-in [] direct plug-in
Connection to the mains ..... :	[] pluggable equipment [] permanent connection [] detachable power supply cord [] non-detachable power supply cord [X] not directly connected to the mains
Operating condition ..... :	[X] continuous [] rated operating / resting time:
Access location ..... :	[] operator accessible [X] restricted access location
Over voltage category (OVC) ..... :	[] OVC I [x] OVC II [] OVC III [] OVC IV [] other:
Mains supply tolerance (%) or absolute mains supply values ..... :	-10%, +6%
Tested for IT power systems ..... :	[X] Yes [] No
IT testing, phase-phase voltage (V) ..... :	230V (considered for Norway)
Class of equipment ..... :	[] Class I [] Class II [] Class III [X] Not classified, Class I construction
Considered current rating (A) ..... :	B/I
Pollution degree (PD) ..... :	[] PD 1 [X] PD 2 [] PD 3
IP protection class ..... :	IPXX
Altitude during operation (m) ..... :	Up to 2000
Altitude of test laboratory (m) ..... :	< 1000
Mass of equipment (kg) ..... :	0.5kg
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 of receipt of test item ..... :	2005.01, 2006-04
Date(s) of performance of tests ..... :	2005-01, 2006-04

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.

Note: This TRF includes EN Group Differences together with National Differences and Special National Conditions, if any. All Differences are located in the Appendix to the main body of this TRF.

Throughout this report a point is used as the decimal separator.

General product information:

1) Application details / Description of the product:

The product tested is a Switching Power Supply (SWPS) for use in general office equipment (host equipment is not specified).

Specification of installation instruction manual provided to host equipment maunfacturer.

No part of the SWPS is intended for any operator access.

Relevant tests were performed in the most severe condition allowed by the installation instruction.

The power supply consists of a single PCB.

Max. specified ambient temperature (°C):	50
Other conditions for built-in.....:	(see below and the separate installation instructions)
PE connection:	Class I construction, PE connection is required.
Electric strength test:	Pri-PE: 1979Vac Pri-sec: 3000Vac (max working voltage: 660Vpeak, 355Vrms)

2) Differences between the models:

Model MTW15-51515#* is identical to model MTW15-51212#* except for model name, output ratings, transformer T1 (number of windings only) and rating of secondary components (CR58, CR59, IC51, IC52).

Suffix "#*" is for marketing purposes only.

3) Options:

The equipment was tested without any optional accessory installed. Hence, this report does not cover parameters that are influenced by the installation of optional accessory that might affect safety in the meaning of this standard.

4) Insulation system:

- Secondary circuits are separated from primary by double/reinforced insulation.
- Primary circuits are separated from earth pattern by basic insulation.
- All output voltages are at SELV level.

4.1) Sub-units (PCB's, ...)

With pri – sec separation .....: PCB

With pri – parts only .....: (none)

HV-unit(s) .....: (none)

.....:

4.2) Pri - sec components, which are not part of the above mentioned sub-units:

(none)

4.3) Non certified pri-components directly mounted to chassis:

(certified components were only checked for correct-application (see 1.5.1)

(none)

Attachments included in this Test Report:

- Measurement Section
- National Differences

Attachments separated from this Test Report:

- Photo Documentation

Abbreviations that may be used throughout this test report:

PE/PB	: protective earth/protective bonding	Pri ..... :	primary
CB	: circuit breaker	sec ..... :	secondary
(SW)PS	: (switching) power supply	gnd ..... :	ground
HV	: high voltage	I/O ..... :	input/output
PCB	: printed circuit (wiring) board	ii ..... :	installation instruction
TIW	: triple insulated wire		
B/I	: built-in application (compliance shall be guarantee in host equipment)		

F/B/S/R : Functional/Basic/Supplementary/Reinforced Insulation