Test Report issued under the responsibility of:

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

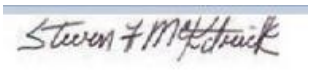
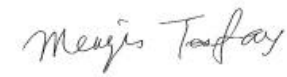
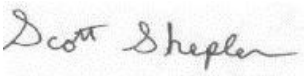
Report Reference No ..... :	E220248-A41-CB-1
Date of issue ..... :	2018-04-27
Total number of pages ..... :	48
CB Testing Laboratory ..... :	UL RTP
Address ..... :	12 Laboratory Drive, Research Triangle Park , NC, 27709, USA
Applicant's name ..... :	TDK-LAMBDA AMERICAS INC
Address ..... :	SUITE 100 3320 MATRIX DR RICHARDSON TX 75082 UNITED STATES
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 ..... :	DC Filter
Trade Mark ..... :	None
Manufacturer ..... :	TDK-LAMBDA AMERICAS INC SUITE 100 3320 MATRIX DR RICHARDSON TX 75082 UNITED STATES
Model/Type reference ..... :	FQA020ADC-XXX-(S) or -(M) FQB020ADC-XXX(-S) or (-M); Where "XXX" may be any alphanumeric character representing non safety features.
Ratings ..... :	Not required. Class III 28VDC, range 10 - 40 VDC Input; 28VDC, range 10 - 40 VDC output.

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)....:	
[ ]	**Testing Procedure: TMP/CTF Stage 1**	
	Testing location / address .....:	
	Tested by (name + signature) .....:	
	Approved by (name + signature)....:	
[x]	**Testing Procedure: WMT/CTF Stage 2**	
	Testing location / address .....:	TDK-Lambda Americas Inc., 3320 Matrix Drive Suite 100, Richardson, TX 75082, USA
	Tested by (name + signature) .....:	Steve Mctrick-Tester 
	Witnessed by (name + signature) ..:	Mengis Tesfay- Handler 
	Approved by (name + signature)....:	Scott Shepler - Reviewer 
[ ]	**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 (51 pages)
Enclosures (36 pages)
Summary Of Testing Unless otherwise indicated, all tests were conducted at TDK-Lambda Americas Inc., 3320 Matrix Drive Suite 100, Richardson, TX 75082.
Tests performed (name of test and test clause) **Testing location / Comments**

General Guidelines

Input: Single-Phase (1.6.2)

Heating (4.5.1, 1.4.12, 1.4.13)

Electric Strength (5.2.2)

Abnormal Operation (5.3.1 - 5.3.9)

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: AR, AT, AU, BE, BG, BY, CA, CH, CS, CZ, DE, DK, ES, EU, FI, FR, GB, GR, HU, IE, IL, IN, IT, JP, KR, MY, NL, NO, NZ, PL, PT, RO, SA, SE, SG, SI, SK, UA, US, ZA

The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013

Copy of Marking Plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

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 (unit intended for building-in)
Over voltage category (OVC) ..... :	OVC II
Mains supply tolerance (%) or absolute mains supply values ..... :	No direct connection
Tested for IT power systems ..... :	No
IT testing, phase-phase voltage (V) ..... :	N/A
Class of equipment ..... :	Class III (supplied by SELV)
Considered current rating of protective device as part of the building installation (A) ..... :	N/A (External 30A Listed fuse specified in user manual)
Pollution degree (PD) ..... :	2
IP protection class ..... :	IP X0
Altitude of operation (m) ..... :	less than 2000 meters
Altitude of test laboratory (m) ..... :	less than 2000 meters
Mass of equipment (kg) ..... :	Less than 1 kg
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 ..... :	2018-03-20
Date(s) of Performance of tests ..... :	2018-03-28
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:	Yes
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.	
Name and address of Factory(ies):	TDK-LAMBDA MALAYSIA SDN BHD PLO33 KAWASAN PERINDUSTRIAN SENAI 81400 SENAI JOHOR MALAYSIA TDK-LAMBDA AMERICAS INC

SUITE 100
3320 MATRIX DR
RICHARDSON TX 75082
UNITED STATES

GENERAL PRODUCT INFORMATION:

Report Summary

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

Product Description

The units are DC-DC power filter modules for building in designed to help reduce differential and common mode conducted emissions from dc-dc switching power supplies.

Model Differences

Models FQA020ADC-XXX-(S) and FQB020ADC-XXX(-S) modules are identical in construction except Q12 is not populated on model FQA020ADC-XXX-(S).

Additional Information

Marking label provdied represents all models within this report.

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 25°C
- 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 following Production-Line tests are conducted for this product: Electric Strength as follows: 2250 Vdc Input to Ground
- The following secondary output circuits are SELV: All outputs
- The following secondary output circuits are at hazardous energy levels: All
- The power supply terminals and/or connectors are: Not investigated for field wiring
- The investigated Pollution Degree is: 2
- The following end-product enclosures are required: Fire, Electrical
- Input test Measurements were made in fixture on lab bench with Fan, rated: 14Vdc, 0.3Adc --
- The Quarter brick package filter modules come with through hole pins with 4.57mm tail length are used for mounting the modules in the end user application. --
- The filter modules are not internally fused. An external fuse of 30A is recommended. See

manufacturer’s data sheet for additional information. , --

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)