



Test Report issued under
the responsibility of:



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

Report Reference No: E132035-A61-CB-1

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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
NAGAOKA TECHNICAL CENTER

Address: 2704-1 SETTAYA-MACHI
NAGAOKA-SHI
NIIGATA-KEN 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

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Test item description	DC-DC Converter
Trade Mark	<i>TDK-Lambda</i>
Manufacturer	TDK-LAMBDA CORP NAGAOKA TECHNICAL CENTER 2704-1 SETTAYA-MACHI NAGAOKA-SHI NIIGATA-KEN 940-1195 JAPAN
Model/Type reference	CCG15-24-xxS, and CCG15-48-xxS (where xx: 03, 05, 12 or 15). Maybe followed by suffix /P.
Ratings	9 - 36 Vdc (for Model CCG15-24-xxS) 1.9 A (for Model xx: 03) 2.1 A (for Model xx: 05 or 15) 2.2 A (for Model xx: 12) 18 - 76 Vdc (for Model CCG15-48-xxS) 1.0 A (for Model xx: 03 or 15) 1.1 A (for Model xx: 05 or 12)

Testing procedure and testing location:	
<input checked="" type="checkbox"/> CB Testing Laboratory Testing location / address: UL Japan, Inc. 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan <input type="checkbox"/> Associated CB Test Laboratory Testing location / address: Tested by (name + signature): Tetsuo Iwasaki Approved by (name + signature).....: Masatomo Takiyama	 <hr style="width: 100%;"/> 
<input type="checkbox"/> Testing Procedure: TMP/CTF Stage 1 Testing location / address: Tested by (name + signature): Approved by (name + signature).....:	<hr/> <hr/> <hr/>
<input type="checkbox"/> Testing Procedure: WMT/CTF Stage 2 Testing location / address: Tested by (name + signature): Witnessed by (name + signature) ..: Approved by (name + signature).....:	<hr/> <hr/> <hr/> <hr/>
<input type="checkbox"/> Testing Procedure: SMT/CTF Stage 3 or 4 Testing location / address: Tested by (name + signature): Approved by (name + signature).....: Supervised by (name + signature) .:	<hr/> <hr/> <hr/> <hr/>
<input type="checkbox"/> Testing Procedure: RMT Testing location / address: Tested by (name + signature): Approved by (name + signature).....: Supervised by (name + signature) .:	<hr/> <hr/> <hr/> <hr/>

List of Attachments	
National Differences (56 pages)	
Enclosures (25 pages)	
Summary Of Testing	
Unless otherwise indicated, all tests were conducted at UL Japan, Inc. 4383-326 Asama-cho, Ise-shi, Mie, 516-0021, Japan.	
Tests performed (name of test and test clause)	Testing location / Comments

Input: Single-Phase (1.6.2)
Energy Hazard Measurements (2.1.1.5, 2.1.2, 1.2.8.10)
Determination of Working Voltage; Working Voltage
Measurement (2.10.2)
Heating (4.5.1, 1.4.12, 1.4.13)
Electric Strength (5.2.2)
Component Failure (5.3.1, 5.3.4, 5.3.7)
Transformer Abnormal Operation (5.3.3, 5.3.7b, Annex
C.1)

Summary of Compliance with National Differences:

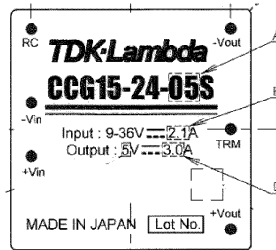
Countries outside the CB Scheme membership may also accept this report.

List of countries addressed: AR, AT, AU, BE, BG, BY, CA, CH, CN, 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

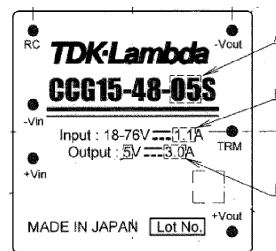
The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013

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.



MODEL	A	B	C	D
CCG15-24-03S EHFP +	03	1.9	3.3	4.0
CCG15-24-05S EHFP +	05	2.1	5	3.0
CCG15-24-12S EHFP +	12	2.2	12	1.3
CCG15-24-15S EHFP +	15	2.1	15	1.0



MODEL	A	B	C	D
CCG15-48-03S EHFP +	03	1.0	3.3	4.0
CCG15-48-05S EHFP +	05	1.1	5	3.0
CCG15-48-12S EHFP +	12	1.1	12	1.3
CCG15-48-15S EHFP +	15	1.0	15	1.0

Test item particulars :	
Equipment mobility	for building-in
Connection to the mains	N/A
Operating condition	continuous
Access location	for building-in (component type)
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	IP X0
Altitude of operation (m)	Up to 5000
Altitude of test laboratory (m)	approximately 10 to 20 m
Mass of equipment (kg)	20 g
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	2016-02-24, 2016-03-07, 2016-03-14, 2016-03-18, 2016-04-04
Date(s) of Performance of tests	2016-03-25 to 2016-04-04
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 IEC 60950-1:	
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	Not Applicable
When differences exist, they shall be identified in the General Product Information section.	
Name and address of Factory(ies):	TDK YURI-HONJO CORP HONJYO MAIN FACTORY 16-57 AZA-YAMANOKAMI ISHIWAKI YURI-HONJO-SHI

AKITA-KEN 015-0014 JAPAN

GENERAL PRODUCT INFORMATION:**Report Summary**

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

Product Description

These units are component "DC/DC Converter" with single DC output.

Output Ratings:

3.3 Vdc (2.97 Vdc - 3.63 Vdc), maximum 4.0 A (maximum 13.2W) for CCG15-24-03S and CCG15-48-03S.

5 Vdc (4.5 Vdc - 5.5 Vdc), maximum 3.0 A (maximum 15.0W) for CCG15-24-05S and CCG15-48-05S.

12 Vdc (10.8 Vdc - 13.2 Vdc), maximum 1.3 A (maximum 15.6W) for CCG15-24-12S and CCG15-48-12S.

15 Vdc (13.5 Vdc - 16.5 Vdc), maximum 1.0 A (maximum 15.0W) for CCG15-24-15S and CCG15-48-15S.

Model Differences

The differences between Models CCG15-24-xxS and CCG15-48-xxS, maybe followed by suffix /P, are as follow.

Each model is identical, except for model designation, input/output rating, Transformer (T2), PWB, and some minor secondary side components.

xx: output voltage (See Production Description for detail).

PWB for models "xx" is 03 or 05: PZC-197

PWB for models "xx" is 12 or 15: PZC-198

Suffix /P: Positive logic on/off control.

Additional Information

Unless otherwise stated, model CCG15-48-xxS was used for test purposes and is considered representative of entire series.

Following output load conditions were taken into consideration during the tests.

- Condition A: Rated Output Load at Nominal Output Voltage setting.
- Condition B: Rated Output Load at Maximum Output Voltage setting.
- Condition C: Rated Output Load at Minimum Output Voltage setting.

See Product Description for details.

UL Standard has requirements that meet or exceed the relevant IEC requirements.

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: 60°C or 85°C, and 110°C at Case (Center of top surface)

- 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 secondary output circuits are at non-hazardous energy levels: Output of all models.
- The investigated Pollution Degree is: 2
- The following end-product enclosures are required: Fire, Electrical
- Unit intended for building-in and supplied power from secondary circuit which is isolated from primary circuit by double or reinforced insulation. --
- Only functional insulation provided between input/output circuits. --
- During the tests, following external fuse was provided. For model CCG15-24-xxS: SOC Corp., Type DC86V11CT, Rated 86Vdc, 6.3 A (UL Listed). For model CCG15-48-xxS: SOC Corp., Type DC86V11CT, Rated 86Vdc, 5 A (UL Listed). --
- Metal case is floating. --
- The following secondary output circuits are Not SELV: All models' output circuits --

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)