

## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
<b>Certification Type:</b>	Component Recognition
<b>CCN:</b>	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
<b>Complementary CCN:</b>	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
<b>Product:</b>	DC-DC Converter
<b>Model:</b>	CCG15-24-xxS, and CCG15-48-xxS (where xx: 03, 05, 12 or 15). Maybe followed by suffix /P.
<b>Rating:</b>	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)
<b>Applicant Name and Address:</b>	TDK-LAMBDA CORP NAGAOKA TECHNICAL CENTER 2704-1 SETTAYA-MACHI NAGAOKA-SHI NIIGATA-KEN 940-1195 JAPAN

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

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Reviewed by: Masatomo Takiyama

### Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
  - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
  - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
  - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

### 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.

### Technical Considerations

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

**Engineering Conditions of Acceptability**

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. 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 UL Listed fuse was provided. For model CCG15-24-xxS: Rated 86Vdc, 6.3 A. For model CCG15-48-xxS: Rated 86Vdc, 5 A.
- Metal case is floating. The separation between metal case and internal parts at hazardous voltage (maximum working voltage of: 130 Vpk) has not been evaluated as any type of insulation.
- The following secondary output circuits are Not SELV: All models' output circuits
- The following secondary output circuits are at PS2 energy levels: Output of all models.
- The following secondary output circuits are ES1: All models' output circuits.
- Unit intended for building-in and supplied ES1 or ES2 power from secondary circuit which is isolated from primary circuit by double or reinforced insulation.

**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.

**Additional Standards**

The product fulfills the requirements of: UL 62368-1, 2nd Edition, 2014-12-01, CAN/CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12.

**Markings and instructions**

Clause Title	Marking or Instruction Details
Power rating - Company	

Issue Date: 2016-04-12  
2019-02-21

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Report Reference #

E132035-A62-UL

identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number