UL TEST REPORT AND PROCEDURE

Standard:	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)
Certification Type:	Component Recognition
CCN:	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Complementary CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Product:	Power Supply, Built-In DC/DC Converter
Model:	CC10-wwxxyz#-E (ww: 05, 12, 24 or 48, xx:03, 05 or 12, y: S, z: F or R, #: A to Z or blank) or (ww: 05, 12, 24 or 48, xx: 12, y: D, z: F or R, #: A to Z or blank)
Rating:	Input: 4.5 - 9 Vdc (for Model ww: 05) 9 - 18 Vdc (for Model ww: 12) 18 - 36 Vdc (for Model ww: 24) 36 - 76 Vdc (for Model ww: 48) Output: 3.3 - 3.6 Vdc, 2500 mA (for Models CC10-w03Sz#-E) 5 - 6 Vdc, 2000 mA (for Models CC10-ww05Sz#-E) 12 - 15 Vdc, 800 mA (for Model CC10-0512Sz#-E) 12 - 15 Vdc, 1000 mA (for Models CC10-ww12Sz#-E, ww = 12, 24) 12 - 15 Vdc, 900 mA (for Model CC10-4812Sz#-E) ±12 - ±15 Vdc, 400 mA (for Model CC10-0512Dz#-E) ±12 - ±15 Vdc, 450 mA (for Models CC10-ww12Dz#-E, except for ww = 05)
Applicant Name and Address:	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.

Prepared by: Tomoko Fujii Reviewed by: Tetsuo Iwasaki

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 one or two DC outputs and functional insulation.

Model Differences

The differences between Models CC10-wwxxyz#-E are ratings. ww: Input voltage (05 = 4.5-9 Vdc, 12 = 9-18 Vdc, 24 =18-36 Vdc, 48 = 36-76 Vdc) . xx: output voltage (03 = 3.3-3.6 Vdc, 05 = 5-6 Vdc, 12 = 12-15 Vdc). y: Number of output circuit (S = 1, D = 2). z: structural of terminal (F = dip type, R = SMD type). Suffix of # expresses manufacturer's management code, which does not affecting to safety.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : N/A
- Operating condition : continuous
- Access location : N/A (for building-in component)
- Over voltage category (OVC) : N/A
- Mains supply tolerance (%) or absolute mains supply values : +5%, -5%
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : N/A
- 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) : less than 2000 m
- Altitude of test laboratory (m) : less than 2000 meters
- Mass of equipment (kg) : < 10 g
- The product was submitted and tested for use at the manufacturer's recommended ambient temperature (Tma) permitted by the manufacturer's specification of: CC10-wwxxSz#-E (ww: 05,12,24 or 48, xx:03,05 or 12, z: F or R, #: A to Z or blank) 50 , (100 % load), 70 , (40 % load). CC10-wwxxDz#-E (ww: 05,12,24 or 48, xx: 12, z: F or R, #: A to Z or blank) 35 , (100 % load), 75 , (40 % load).

- The component has been tested using dc supply source under 4.5 Vdc up to 76 Vdc input voltage.
- Maximum Working Voltages: 160 Vpk, 107 Vrms. See sub-clause 2.10.2 for details.
- The components provide functional insulation only.

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 outputs supply SELV voltages when unit is connected to a Hazardous Secondary Voltage not exceeding 76 Vdc , and the source is separated from PRI by double or reinforced insulation.
- A Heating Test shall be considered in end product.
- The metal chassis shall be bonded to protective earthing in end product. If not, the insulation coordination shall be reconsidered it in end product.
- The following secondary output circuits are SELV: Output of each model.
- The following secondary output circuits are at non-hazardous energy levels: Output of each model.,
- The investigated Pollution Degree is: 2
- Proper bonding to the end-product main protective earthing termination is: Not required
- The following end-product enclosures are required: Fire, Electrical
- The following output circuits are at ES1 energy levels: Output of all models
- The following output circuits are at PS3 energy levels: Output of all models.
- 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.
- Only functional insulation provided between input/output circuits, which complies with electric strength test at 500Vac.
- Metal case is floating. The separation between metal case and internal parts at hazardous voltage (maximum working voltage of: 160 Vpk) has not been evaluated as any type of insulation.

Additional Information

Unless otherwise specified, Component Failure Test and SELV Reliability Test were conducted on Models CC10-4812SF-E and CC10-4812DF-E, Heating Test and Transformer Abnormal Operation Test were conducted on Models CC10-0503SF-E and CC10-0512DF-E, Humidity Test was Models CC10-0503SF-E and CC10-4812DF-E. Electric Strength Test for basic insulation between input terminals and output terminals was conducted on the above models.

Markings and instructions

Clause Title	Marking or Instruction Details
Printed Wiring Boards with Humiseal Spray:	The following printed wiring boards have been evaluated for flammability 94V-0 in combination with Humiseal spray Cat. No. 1B41: Manufacturer: Rating: 94V-0 Yamashita Circuite Corp. Type: P1, P100 Sanwa print Seisakusho Co., Ltd. Type: CGV Itabashi Seiki Co., Ltd. Type: 60T The following printed wiring boards have been evaluated for flammability 94V-0 in combination with Humiseal, Type 1B51NS Spray: Manufacturer: Rating: 94V-0

	Yamashita Circuitec Corp. Type: P1 Sanwa Print Seisakusho Co., Ltd. Type: FR4 Itabashi Seiki Co., Ltd. Type 39 Shoei Print Seisakusho Co., Ltd. Type: 600 Tsuding Global Electronic Co. Ltd. Type: HM5 Yamashita Circuitec Corp. Type : P490 Leo Electronics Inc. Type: 03V0 Shirai Denshi Kogyo Co., Ltd. Type: M76E, MOO Lung Wei Electronics., Ltd. Type: 99 China Circuit Technology (Shantou) Corp. Type: 5 Plotech Co. Ltd. Type: 1
Recognized Marking	UL Recognized Component Mark
1.7.1 Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
1.7.1 Power rating - Model	Model Number