

## 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>Product:</b>	DC-DC Converter
<b>Model:</b>	GQA24***A%%V-xxx (-R), (PR); (-R) indicating RoHS compliance, or -(007) for unpotted or (-0P7) for potted.  GQA2W***A%%V-xxx(-R), (PR); (-R) indicating RoHS compliance, or -(007) for unpotted or (-0P7) for potted.
<b>Rating:</b>	See Enclosure 7-02
<b>Applicant Name and Address:</b>	TDK-LAMBDA AMERICAS INC SUITE 100 3320 MATRIX DR RICHARDSON TX 75082 UNITED STATES

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: Jason Ferguson

Reviewed by: Gregory Ray

**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**

The product is a component type DC/DC power module, intended to be used as a component in an end user's power system. These device are DC-DC power supplies with open frame construction for building-in.

**Model Differences**

The GQA product is available in four mechanical configurations that both use the same transformer core set and output filter inductor core set except for the air gap and number of turns embedded in the pcb. The four mechanical configurations use the same pcb and part set, the difference between them is the physical size of the base plate that is mounted on the unit. One house-keeping transformer is used in GQA platform. The house keep magnetic is used to deliver the drive pulses and bias power across the isolation boundary from secondary to the primary side.

GQA24\*\*\*A%%V-xxx(-R), (PR), or -(007) for unpotted or (-0P7) for potted; where 24 represents nominal input voltage, with a 18-36 Vdc input, Max Input Current 9 Adc; \*\*\* represents rated output current between 0 A - 2.5 A; %%% represents rated output voltage, 48 Vdc nominal, with Max Output Power of 120 W; and xxx indicates a number or alphanumeric characters which indicates a feature set.. (Optional (-R) indicating RoHS compliance, or (-007) for unpotted, or (-0P7) for potted)

GQA2W\*\*\*A%%V-xxx(-R), (PR), or -(007) for unpotted, or (-0P7) for potted where 2W represents nominal input voltage, with a 9 36 Vdc input, with a Max Input Current of 23 A; \*\*\* represents rated output current between 4.28 A - 20 A; %%% represents rated output voltage between, 5 Vdc -28 Vdc, with Max Output Power of 150 W; and xxx indicates a number or alphanumeric characters which indicate a feature set. (Optional (-R) indicating RoHS compliance, or (-007) for unpotted or (-0P7) for potted).

All models are similar except for input rating, output rating, and number of turns for the power transformer.

**Technical Considerations**

- Equipment mobility : for building-in
- Connection to the mains : not directly connected to the mains
- Operating condition : continuous
- Access location : operator accessible
- Over voltage category (OVC) : OVC I

- 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 : 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) : less than 2000 meters
- Altitude of test laboratory (m) : less than 2000 meters
- Mass of equipment (kg) : Max. 0.088 kg
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 25°C
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual

**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 SELV: 48 Vdc
- The following secondary output circuits are at non-hazardous energy levels: 48 Vdc
- The investigated Pollution Degree is: 2
- The following end-product enclosures are required: Fire, Electrical

**Additional Information**

N/A

**Markings and instructions**

Clause Title	Marking or Instruction Details
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number

**Special Instructions to UL Representative**

N/A