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)
Product:	DC-DC Converter
Model:	i7Czz***A%%%V-xxx-R where zz represents input voltage where it may be 2W (9-36 VDC input), or 4W (9-53 VDC input), 30A max input current. *** represents rated output current between 0A - 30A, where *** may be 1 to 3 digits. %%% represents rated output voltage between 0.8Vdc - 56Vdc, where %%% may be 1 to 3 digits. xxx indicates a number or alphanumeric character which affects non safety related features. -R is optional and indicates RoHS compliance.
Rating:	Not required. Input: 9-53Vdc, 30A Max Output: 0.8 VDC to 56VDC; Max 30A, 439 W maximum.
Applicant Name and Address:	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: Mengis Tesfay - Project Handler Reviewed by: Scott Shepler

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 i7C product family consists of non-isolated DC-DC power modules intended to be used as a component in an end-user's power system. The modules will be offered in multiple input voltage and output voltage ranges. The input ranges from 9 - 53Vdc input at 30 A max. The output voltage will be adjustable between 0.8V to 56V. The rated output power will be 439W or less

Model Differences

All models within the series are similar except for input rating, output rating, and size of inductor.

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 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).

- 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: All
- The following secondary output circuits are at hazardous energy levels: All
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- 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 components require special consideration during end-product Thermal (Heating) tests due to the indicated maximum temperature measurements during component-level testing: PWB. Rated 130 C.
- Power to the DC-DC Converter is intended to be supplied by isolated secondary circuitry in an end-use application.
- All Units were tested with an external 30A fuse during Abnormal Operation and Component Fault testing.
- The following components require special consideration during end-product Thermal (Heating) tests due to the indicated maximum temperature measurements during component-level testing: The PWB is rated 130°C.
- Output voltage may be adjusted for up the maximum fixed output power (i.e. maximum output current is decreased). When the output voltage is adjusted down, the maximum output current is fixed (i.e. available output power is decreased).

Additional Information

Correction 2 - Corrected input rating from 5 - 56 Vdc input to 9 - 53 VDC in Product Description section of GPI, due to typographical error. Also corrected max power under Models and Rating to 439 Watts to match test data, due to typographical error. No testing deemed necessary.

Correction 1 to Report E220248-A42 was issued to add more description to the naming convention regarding *** and %%%. Additionally, maximum wattage was added to the ratings for improved clarification. No other changes were made to the report.

Models i7C4W008A120V-xxx(-R), i7C2W020A120V-xxx(-R) of i7C series were used for test purposes and are considered representative of the entire series. Model i7C4W008A120V-xxx is the highest output voltage and highest power module within the series.

Marking label provided represents all models in series.

Additional Standards

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

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	

Production-Line Testing Requirements

Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
N/A						

Earthing Continuity Test Exemptions - This test is not required for the following models:

All

Electric Strength Test Exemptions - This test is not required for the following models:

All

Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:

Sample and Test Specifics for Follow-Up Tests at UL

Model	Component	Material	Test	Sample(s)	Test Specifics
N/A					