UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 2nd Ed, 2014-12-01 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1-14, 2nd Ed-(Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Component Recognition
CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	DC-To-DC Converters
Model:	iQL48***A%%%V-0##-R; where *** represents a three digit output current between 8 A – 60 A; (Note that the first digit is always “0”); where %%% represents a three digit output voltage between 1.2 V – 28 V, (Note that the third digit is preceded by a decimal point. Example 120 implies 12.0 Volts.) followed by where 0## or 0xx is a three digit number or alphanumeric character indicating a mechanical or control function modification. iQL24***A%%%V-0##-R; where *** represents a three digit output current between 17A – 50 A; where %%% represents a three digit output voltage between 1.2 V – 12 V, (Note that the third digit is preceded by a decimal point. Example 120 implies 12.0 Volts.) followed by where 0## or 0xx is a three digit number or alphanumeric character indicating a mechanical or control function modification. The matrix under Misc enclosure indicate various iQL model numbers with the output power levels up to 308W. The highest output power module is 28 Vdc / 11 A / 308 W.
Rating:	iQL48***A%%%V-0##-R; Input: DC 18 – 75 Vdc, max. 14.6 A Output: DC 1.2 - 28 Vdc, max. 60 A, max. 308 W

	iQL24***A%%%V-0##-R; Input: DC 18 – 36 Vdc, max. 14.5 A Output: DC 1.2 - 12 Vdc, max. 50 A, max. 252 W
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 / Reviewer

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 to DC power module with a planar power transformer. The converter is provided with input terminal pins for factory installation onto a printed wiring board with a connection to a dc source of supply and output terminal pins. These models have been evaluated as having Basic insulation from input to output. The product employs a multilayer PWB planar transformer. The input voltage range is from DC 36 – 75 V input. The output voltage range will be between 1 V and 28 Vdc depending upon the model number.

The product is available in one mechanical configuration using the same transformer core set and inductor core set except for the air gap used in the inductor. The house-keeping transformers used for the bias supply, current sensing, and gate drive purposes are also the same for all iQL series.

Model Differences

All models within the iQL Series employ identical mechanical configuration, using the same PWB, same transformer winding turns ratio, same transformer core set, and inductor core set.

Test Item Particulars

Classification of use by	Instructed person
Supply Connection	External Circuit - not Mains connected ES2
Supply % Tolerance	None
Supply Connection – Type	Not connected to Mains. For building in
Considered current rating of protective device as part of building or equipment installation	For building in. 15 A fuse to be provided in an end product. A; equipment
Equipment mobility	for building-in
Over voltage category (OVC)	other: Not connected to Mains
Class of equipment	Not classified
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient (°C)	25 C
IP protection class	IPX0
Power Systems	N/A
Altitude during operation (m)	2000 m or less

Altitude of test laboratory (m)	app 180 m m
Mass of equipment (kg)	0.10

Technical Considerations

- 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 is intended for use on the following power systems : No direct connection
- Considered current rating of protective device as part of the building installation (A) : For building in. 15 A fuse to be provided in an end product.
- Mains supply tolerance (%) or absolute mains supply values : No direct connection
- The equipment disconnect device is considered to be : N/A
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- The product was investigated to the following additional standard : EN 62368-1:2014 + A11:2017

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 product-line tests are conducted for this product : Electric Strength
- The following output circuits are at ES1 energy levels : All
- The following output circuits are at PS3 energy levels : Output Terminal
- The maximum investigated branch circuit rating is : EUT is for building in. 15 A external fuse is to be provided in the end product.
- The investigated Pollution Degree is : 2
- The following end-product enclosures are required : Electrical, Fire
- Heating Test shall be evaluated in end product.
- This component has been evaluated in 'control of fire spread' method assuming appropriate fire enclosure is provided in end product. Unless the fire enclosure is made of non-combustible or V-0 material, the separation from the PIS shall be considered
- Classification of PIS has not been conducted. Therefore, all electrical components and conductors including printed wirings were assumed to be arcing/resistive PIS.
- Unit intended for building-in and supplied power from secondary circuit which is isolated from primary circuit by double or reinforced insulation.

Additional Information

This report is based on VDE CB report reference 218758-CI3-3 and CB Test Certificate Ref. DE1-56444 respectively which was previously evaluated to UL/CSA/IEC 60950-1, 2nd edition, + Amendment 1 & 2.

Testing conducted in accordance with IEC 60950-1:2005 (Second Edition), Am1:2009 + Am2:2013; UL 60950-1, 2nd Edition, 2014-10-14; and CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10, and was deemed equivalent to the test required by IEC62368-1, 2nd Edition, CAN/CSA-C22.2 NO. 62368-1 2nd Ed, Issued December 1, 2014, and UL 62368-1 2nd Ed, Issued December 1, 2014. Testing correlation explanation provided in Enclosure.

All original sample and test dates are noted in the testing portion of this report.

The nameplate included in the report is representative of all models covered under this report.

Additional Standards

The product fulfills the requirements of: EN 62368-1:2014 + A11:2017

Markings and Instructions

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listees or Recognized companys name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number

Special Instructions to UL Representative

N/A