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-DC Converter
Model:	i3A4W***A%%%V-0xx(-R) Where 4W represents input Voltage between 9 - 53 VDC 10 A Max input current *** represents rated output current between 0 A - 10A, %%% represents rated output voltage between 0 V dc to 30 Vdc. and 0xx indicates a number of alphanumeric characters to denote non safety features. It may also be followed by optional "-R " to denote RoHS compliance. Model examples: i3A4W005A150V-0xx(-R) i3A4W008A033V-0xx(-R)
Rating:	Optional: Rated input Voltage 9-53 VDC Rated Input Current 10 A Rated Power 100 W Rated output: 30 VDC max; 10 A max.
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

EUT is high density non-Isolated DC-DC Converter modules. The converters are 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.

Model Differences

All models are identical except for minor changes to the components based upon the output voltage rating of the unit.

Test Item Particulars

Classification of use by	Instructed person
Supply Connection	External Circuit - not Mains connected ES1
Supply % Tolerance	None
Supply Connection – Type	For building in. To be considered in end system
Considered current rating of protective device as part of building or equipment installation	N/A
Equipment mobility	for building-in
Over voltage category (OVC)	OVC I
Class of equipment	Not classified
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient (°C)	25
IP protection class	IPX0
Power Systems	N/A
Altitude during operation (m)	2000 m or less
Altitude of test laboratory (m)	180 m m
Mass of equipment (kg)	0.1

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. To be considered in end system. Device was evaluated with a 20 A external overcurrent protective device.
- Mains supply tolerance (%) or absolute mains supply values : No direct connection
- The equipment disconnect device is considered to be : To be considered in end system
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- The product was investigated to the following additional standards : 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 output circuits are at ES1 energy levels : All input and output
- The following output circuits are at PS3 energy levels : Outputs: 1.8 Vdc, 2.5 Vdc and 3.3 Vdc
- The maximum investigated branch circuit rating is : For building in. To be considered in end system. Device was evaluated with a 20 A external overcurrent protective device.
- The investigated Pollution Degree is : 2
- The following end-product enclosures are required : Fire, Electrical
- A heating test shall be considered in the end product. The PWB is rated 130°C.

Additional Information

This report is based on VDE CB report references 236795-CI3-1 and CB Test Certificate Ref. DE1-58783 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 per 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. No test is conducted on 2019-09-04. The date is noted for construction review only. Construction Review dated 2019-09-04 was done at the CBTL.

Marking label provided represents all models in series.

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