UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 3rd Ed, 2021-10-22 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1:19, 3rd Ed, 2021-10-22 (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:	Component DC-DC Power Supply
Model:	IQG Series Model Details: IQG Series: Example: iQG4N050A108V-009-R iPAQGxxxx is a iQG48***A%%%V-xxx or iQG4N***A%%%V-xxx, where xxxx is a four-digit number or alphanumeric character indicating a mechanical function, such as addition of Heatsink. May include optional "-R" appended to product model name to indicate ROHS compliance. iQG48***A%%%V-xxx, iQG48N***A%%%V-xxx where *** represents a three-digit output current between 25A - 50A; where %%% represents a three digit output voltage between 8.0V – 12.4V, followed where xxx is a three digit number or alphanumeric character indicating a mechanical or control function modification. May include optional "-R" appended to product model name to indicate ROHS compliance. See Model Matrix under Enclosure. May include optional "-R" appended to product model name to indicate ROHS compliance.
Rating:	Optional 36 - 75 VDC (Max) 15 A

	8 - 12.4 VDC max; Max 50 A Max output Power 540 W
Applicant Name and Address:	TDK-LAMBDA AMERICAS INC 3000 TECHNOLOGY DR, SUITE 100 PLANO TX 75074 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:	Oliver Trinh/Mengis Tesfay / Project Handler	Reviewed By:	Michael Lockhart / 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 a DC-DC Converter which is considered to be a secondary, building-in component intended for use in Information Technology Equipment consisting of electronic components mounted on min. V-1 PWB. The modules will be offered in multiple input voltage and output voltage ranges. The input ranges from 36 - 75 Vdc input at 15 A max. The output voltage will be adjustable between 8V to 12.4 Vdc, max 50A.

Model Differences

All models within the series are similar except for input rating, output rating, and non-safety features variations.

Test Item Particulars

Product group	built-in component
Classification of use by	Instructed person
Supply Connection	not mains connected: ES2
Supply tolerance	None
Supply connection – type	Not directly connected to Mains
Considered current rating of protective device	40 A; Location: building
Equipment mobility	for building-in
Over voltage category (OVC)	OVC II
Class of equipment	Not Classified
Special installation location	N/A
Pollution degree (PD)	PD 2
Manufacturer’s specified Tma (°C)	85°C, per client's provided de-rating curve
IP protection class	IPX0
Power systems	not AC mains
Altitude during operation (m)	2000 m or less
Altitude of test laboratory (m)	2000 m or less
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 : 85°C, per client's provided de-rating curve
- 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) : External fast blow 40 A fuse to be provided in the end product.
- Mains supply tolerance (%) or absolute mains supply : No direct connection
- The equipment disconnect device is considered to be : N/A. For building in
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- The product was investigated to the following additional standard : EN IEC 62368-1:2020+A11:2020

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 : All. Declared.
- The investigated Pollution Degree is : 2
- An investigation of the protective bonding terminals has : Not been conducted
- The following end-product enclosures are required : Electrical, Fire
- The maximum continuous power supply output (Watts) relied on forced air cooling from : Ranging from 5.2 to 70 CFM depending on ambient, and load. See Derating Curve
- The power supply was evaluated to be used at altitudes up to : "2,000 m"
- Test was conducted using fast blow external fuse rated 40 A. External fuse employed shall comply with IEC 60127.
- Heating Test need to re-conducted as part of an end product evaluation to ensure the max temperature of 125 C at PWB near T1 is not exceeded.

Additional Information

Technical Amendment 2: Revised the following two illustrations: • Transformer (T151) AT00143 - TMS60375CS - Gate Transformer and Transformer (T300) AT00131 - TMS60095CS - Bias Transformer. Updated to add similar wire to illustration, and no testing was considered necessary. USA and Canada National Differences TRF has been also updated.

Administrative Amendment 1 - Model description was corrected to match the original report.

This report is based on CB report references E220248-A6003-CB-1 and CB Test Certificate Ref. US-34326-UL, respectively which was previously evaluated to UL 62368-1, 2nd Edition, 2014-12-01, CSA C22.2 No. 62368-1- 14, 2nd Edition, 2014-12, and IEC 62368-1:2014. Testing conducted in accordance with IEC UL 62368-1, 2nd Edition, 2014-12-01, CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12, and IEC 62368-1:2014, was deemed equivalent to the test required per UL62368-1, 3rd Ed December 13, 2019; CAN/CSA-C22.2 No. 62368-1, 3rd Ed December 13, 2019; and IEC62368-1:2018, 3rd Ed.

The original test report was generated from CB report reference numbers 2520400-3336-0023, 2520400-3336-0023 (124227), 2520400-3336-0023/151890, 2520400-3336-0023/160105, 2520400-3336-0023/168899, 2520400-3336-0023/172854, 2520400-3336-0023/182394, 2520400-3336-0023/193814, 207809-CI3-1, 258199-TL1-1 and CB certificates DE1-40099, CB/DE1- 40099/M1, CB/DE1- 40099/A1, CB DE1-49345, CB DE1-49345 /A1, CB DE1-49345 /A2, CB DE1-49345/A3, CB DE1-49345/A3/M1, CB DE1-49345/A4/M1, CB DE1-49345/A5/M1 respectively which was previously evaluated to UL/CSA/IEC 60950-1, 2nd edition, + Amendment 1 + Amendment 2; and UL report E220248-A20.

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; and UL62368-1, 3rd Ed December 13, 2019; CAN/CSA-C22.2 No. 62368-1, 3rd Ed December 13, 2019; and IEC62368-1:2018, 3rd Ed. All original sample and test dates are noted in the testing portion of this report. Only Electric Strength test (5.4.9) was conducted at UL RTP, 12 Laboratory Dr. RTP NC 27709.

Marking label provided represents all models in series. The label also may include an optional "-R" as a suffix to denote ROHS compliance.

Additional Standards

The product fulfills the requirements of: EN IEC 62368-1:2020+A11:2020

Markings and Instructions

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listee's or Recognized Company's name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number

Special Instructions to UL Representative

Units can be fully manufactured in either the Malaysia or Plano, TX location; however, it is also possible that completed units can go back to either factory for rework where a new product label can be applied based on the location that completed the rework.

The Field Inspector should verify that the reworked units came from the original manufacturer (the Factory ID (if any) should be verified). The Field Inspector should verify that the new product label includes all required markings as shown in the Markings and Instructions section.

BD1.0	TABLE: Production-Line Testing Requirements					
BD1.1	**Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.**					
Model	Component	Removable parts	Test probe location	Test V rms	Test V dc	Test Time, s
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BD1.2	**Earthing Continuity Test Exemptions – This test is not required for the following models:**					
	All Models					
BD1.3	**Electric Strength Test Exemptions – This test is not required for the following models:**					
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BD1.4	**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.**					
	N/A					

BE1.0	Sample and Test Specifics for Follow-Up Tests at UL				
Model	Component	Material	Test	Sample (s)	Test Specifics
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