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, Issued: 2014-12-01 (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 Switching Power Supply
Model:	ZBM-ACxxxabcd xxx - represents total capacitance of C2 to C16 (uF), "x" is a number from 0 to 9 (Maximum xxx is 182) Maybe followed by suffix "abcd" (a = "/" , b = "S", c = "FU", d = "CO2" or "a", "b", "c", "d" may be blank)
Rating:	Input: 395VDC MAX (Output: 24VDC, 0.2A)
Applicant Name and Address:	TDK-LAMBDA CORP NAGAOKA TECHNICAL CENTER R&D DIV 2704-1 SETTAYA-MACHI NAGAOKA-SHI NIIGATA 940-1195 JAPAN

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: Atsushi Saito / Project Handler Reviewed By: Toshiyuki Suzuki / 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 DC-DC Switching Power Supply unit intended for use in Information Communication Technology Equipment.

This is optional unit which used with UL/CB certified power supply board (Maximum 4 units are connected in parallel).

This unit is intended to be supplied DC power (Max. 395Vdc) from the circuit in end product which is not isolated from AC mains voltage 100-240Vac.

Model Differences

Nomenclature; ZBM-ACxxxabcd

xxx - represents total capacitance of C2 to C16 (uF), "x" is a number from 0 to 9 (Maximum xxx is 182)

Maybe followed by suffix "abcd" (a = "/" , b = "S", c = "FU", d = "CO2" and "a", "b", "c", "d" may be blank)

a; (separator)

b; S = Assembled secondary circuit (Including T1)

c; FU = Change RS alarm sense point

d; CO2 = Coating of both sides for PWB for functional purpose

Unless otherwise specified, all tests are conducted with assembling maximum capacitance model (ZBM-AC182/S).

Test Item Particulars

Classification of use by	Ordinary person
Supply Connection	External Circuit - not Mains connected ES3
Supply % Tolerance	None
Supply Connection – Type	Internal connection (for building-in)
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 II
Class of equipment	Not classified
Access location	N/A

Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient (°C)	(Refer Enclosure ID 7-01 for detail)
IP protection class	IP is not classified (for building-in)
Power Systems	N/A
Altitude during operation (m)	Up to 5000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	0.26

Technical Considerations

- The product was evaluated to be used in tropical climates.

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 end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary-Secondary: 280 Vrms / 556 Vpk
- The following output circuits are at ES1 energy levels : CN51
- The following output circuits are at PS1 energy levels : CN51
- The investigated Pollution Degree is : 2
- Proper bonding to the end-product main protective earthing termination is : Required
- The following end-product enclosures are required : Electrical, Fire
- Classification of PIS has not been conducted. Therefore, all primary electrical components and conductors including printed wirings were assumed to be arcing/resistive PIS.
- Primary to Ground Capacitor (C18 may have variations in capacitance up to 4700 pF. Therefore, consideration shall be given in controlling the capacitance values in end product application with respect to touch Current issue.
- Humidity conditioning has been conducted by tropical condition.
- 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.
- The following magnetic devices (e.g. transformers or inductor) are provided with IEC 60085 (equivalent to UL 1446) insulation system with the indicated rating greater than Class 105 (A): T1 (Class 155(F))

Additional Information

Refer to Enclosure id. 7-01 for Tma and output derating specification.

Unless otherwise specified, all tests are conducted with connecting an external DC power supply or model ZWS300RC-24/BM (Refer to Enclosure id. 7-01) as a DC power supply.

Additional Standards

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

Markings and Instructions

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

Equipment identification marking – model identification	Model Number