

## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	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)
<b>Certification Type:</b>	Component Recognition
<b>CCN:</b>	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
<b>Complementary CCN:</b>	N/A
<b>Product:</b>	Switching Power Supply
<b>Model:</b>	ZWS300RC-24 abcdefgh Maybe followed by suffix "abcdefgh" (a = "/" , b = T, c = R, d = CO2, e = BM, f = FG, g = FV, h = V and "a", "b", "c", "d", "e", "f", "g", "h" may be blank)
<b>Rating:</b>	Input: 100-240VAC~, 50-60Hz, 4.0A  Output: 24Vdc (21.3 - 26.7V), 12.5A (300W)
<b>Applicant Name and Address:</b>	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.

Issue Date: 2021-10-22 Page 2 of 11 Report Reference # E122103-A6123-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 Switching Power Supply unit intended for use in Information Communication Technology Equipment which is Class I equipment.

### Model Differences

Nomenclature; ZWS300RC-24

Maybe followed by suffix "abcdefgh" (a = "/" , b = T, c = R, d = CO2, e = BM, f = FG, g = FV, h = V and "a", "b", "c", "d", "e", "f", "g", "h" may be blank)

a; (separator)

b; T = Screw terminals

c; R = Remote control

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

e; BM = with ZBM-AC

f; FG = Low leakage current

g; FV = Fixed output voltage without adjustment

h; V = output voltage control

### Test Item Particulars

Classification of use by	Ordinary person
Supply Connection	AC Mains
Supply % Tolerance	+10%/-10%
Supply Connection – Type	Internal connection (for building-in)
Considered current rating of protective device as part of building or equipment installation	20 A; building;
Equipment mobility	for building-in
Over voltage category (OVC)	OVC II
Class of equipment	Class I
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	TN IT - 230 (for Norway) V L-L
Altitude during operation (m)	Up to 5000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	0.52
<b>Technical Considerations</b>	
<ul style="list-style-type: none"> <li>The product was evaluated to be used in tropical climates.</li> </ul>	
<b>Engineering Conditions of Acceptability</b>	
<p>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:</p> <ul style="list-style-type: none"> <li>The end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary-Secondary: 243 Vrms / 472 Vpk</li> <li>The following output circuits are at ES1 energy levels : CN51</li> <li>The following output circuits are at PS3 energy levels : CN51</li> <li>The maximum investigated branch circuit rating is : 20 A</li> <li>The investigated Pollution Degree is : 2</li> <li>Proper bonding to the end-product main protective earthing termination is : Required (via Chassis on which the unit is mounted)</li> <li>The following end-product enclosures are required : Electrical, Fire</li> <li>Classification of PIS has not been conducted. Therefore, all electrical components and conductors including printed wirings were assumed to be arcing/resistive PIS.</li> <li>Line to Line Capacitors (C1 and C4) may have variation in capacitance up to 0.68 uF and 0.47 uF. Therefore, consideration shall be given in controlling the capacitance value in the end-product application with respect to capacitance discharge issue.</li> <li>Primary to Ground Capacitor (C2, C3, C8, C9 may have variations in capacitance up to 1500 pF. Therefore, consideration shall be given in controlling the capacitance values in end product application with respect to touch Current issue.</li> <li>Humidity conditioning has been conducted by tropical condition.</li> <li>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.</li> <li>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): T2 (Class 155(F))</li> </ul>	
<b>Additional Information</b>	
<p>Refer to Enclosure id. 7-01 for Tma and Output derating specification.</p> <p>Some tests are conducted with connecting model ZBM-AC162/S (Optional unit, refer to Enclosure id. 7-01) on primary side as electrical load. This optional unit is not evaluated in this report.</p> <p>Optional output terminal CN53 is provided on model ZWS300RC-24/V to select output voltage 12Vdc&lt;-&gt;24Vdc. It's assumed as ES1 and PS1 due to signal level only.</p>	
<b>Additional Standards</b>	
<p>The product fulfills the requirements of: N/A</p>	
<b>Markings and Instructions</b>	

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
Equipment rating marking – ratings	"Input Ratings (voltage, frequency/dc, current/power)", "Output Ratings (voltage, frequency/dc, current/power)"