

## 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 for building-in
<b>Model:</b>	ZWP350-1000-abcde, CME350P-1000-abcdef and CUS350MP-1000-abcdef  where a is 24, 30, 36 or 48; b is "/" or blank; c is "T" or blank; d is "A", "L" or blank; e is "CO2" or blank; f is "SF" or blank
<b>Rating:</b>	Input: 100-240 Vac, 6.2 A, 50-60 Hz  Output (ZWP350-1000-24, CME350P-1000-24, CUS350MP-1000-24): 24 Vdc (23.5-26.9 Vdc), 14.6 Amax  Output (ZWP350-1000-30, CME350P-1000-30, CUS350MP-1000-30): 30 Vdc (26.5-30.5 Vdc), 11.65 Amax  Output (ZWP350-1000-36, CME350P-1000-36, CUS350MP-1000-36): 36 Vdc (35.5-42.5 Vdc), 9.7 Amax  Output (ZWP350-1000-48, CME350P-1000-48, CUS350MP-1000-48): 48 Vdc (44.5-48.5 Vdc), 7.3 Amax
<b>Applicant Name and Address:</b>	TDK-LAMBDA CORP NAGAOKA TECHNICAL CENTER

Issue Date: 2021-06-10  
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Report Reference #

E122103-A6120-UL

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: Toshiyuki Suzuki / Project  
Handler

Reviewed By: Masatomo Takiyama / 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**

Electronic components mounted on PWB contained AC/DC circuits.

**Model Differences**

- 1) Model ZWP350-1000-abcde is identical to Models CME350P-1000-abcdef and CUS350MP-1000-abcdef. The difference in model designation is for market segmentation and solely for commercial intention.
- 2) Models CME350P-1000-abcde and CUS350MP-1000-abcde equipped with fuse located on both Live and Neutral.

**Test Item Particulars**

Classification of use by	Ordinary person
Supply Connection	AC Mains
Supply % Tolerance	+10%/-10%
Supply Connection – Type	pluggable equipment type A - mating connector
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)	See General Product Information for details.
IP protection class	IPX0
Power Systems	TN
Altitude during operation (m)	up to 5000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	0.77

**Technical Considerations**

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : See General Product Information for details.
- The product is intended for use on the following power systems : TN
- Considered current rating of protective device as part of the building installation (A) : 20
- Mains supply tolerance (%) or absolute mains supply values : +10%/-10%
- The equipment disconnect device is considered to be : provided in end product.
- The following were investigated as part of the protective earthing/bonding : Printed wiring board trace (See Enclosure ID 05-02 - Schematics + PWB for layouts)
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual

### 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 : Earthing Continuity, Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary-Earthed Dead Metal: 150.469 Vrms, 283.333 Vpk, T1: Primary-SELV: 263.620 Vrms, 525.000 Vpk; T2: Primary-SELV: 172.812 Vrms, 691.667 Vpk
- The following output circuits are at ES1 energy levels : all outputs
- The following output circuits are at PS3 energy levels : all outputs
- The maximum investigated branch circuit rating is : 20 A
- The investigated Pollution Degree is : 2
- Proper bonding to the end-product main protective earthing termination is : Required
- An investigation of the protective bonding terminals has : been conducted
- The following end-product enclosures are required : Electrical, Fire, Mechanical
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105°C) : T1 (Class F), T2 (Class F)
- The maximum continuous power supply output (Watts) relied on forced air cooling from : 2.2 m/s air flow applied towards C8/C9, see enclosure ID 07-02 for details.
- The equipment is suitable for direct connection to : AC mains supply

### Additional Information

Maximum Operating Temperature, Tma (°C)

Models without /A suffix:

35 °C for 100 % load (Condition A and B), Mounting Position D;  
40 °C for 100 % load (Condition A and B), Mounting Position E and F;  
50 °C for 100 % load (Condition A and B), Mounting Position A, B and C;  
70 °C for 45 % load (Condition C and D), Mounting Position B;  
70 °C for 35 % load (Condition E and F), Mounting Position A, C and F;  
70 °C for 30 % load (Condition G and H), Mounting Position D and E;

Models with /A suffix:

35 °C for 100 % load (Condition A and B), Mounting Position F;  
45 °C for 100 % load (Condition A and B), Mounting Position A, C, D and E;  
50 °C for 100 % load (Condition A and B), Mounting Position B;  
70 °C for 30 % load (Condition G and H), Mounting Position A, B, C, D, E and F;

Per manufacturer's requested, force air for 500W loading, peak loading and force air plus peak loading were performed on 48V output model as representative of all other output models as following to simulate end system scenario:

Forced air Loading

- 264V, Output 10.4A with external fan (details see Enclosure ID 07-02)
- 90V, Output 10.4A with external fan (details see Enclosure ID 07-02)

**Peak Loading:**

- 85Vac, Output: Turn on: 16.7A, 5 Sec, Turn off : 5.7A, 495 Sec (Prms=280W)
- 110Vac Output: Turn on: 16.7A, 5 Sec, Turn off : 7.2A, 495 Sec (Prms=350.4W)
- 265Vac Output: Turn on: 16.7A, 5 Sec, Turn off : 7.2A, 495 Sec (Prms=350.4W)
- 170Vac, Output: Turn on: 20.9A, 3 Sec, Turn off : 7.1A, 297 Sec (Prms=350.4W)
- 265Vac , Output: Turn on: 20.9A, 3 Sec, Turn off : 7.1A, 297 Sec (Prms=350.4W)


**Forced air plus Peak Loading:**

- 85Vac, Output: Turn on: 16.7A, 5 Sec, Turn off : 8.3A, 495 Sec (Prms=400W) with external fan (details see Enclosure ID 07-02)
- 110Vac Output: Turn on: 16.7A, 5 Sec, Turn off : 10.4A, 495 Sec (Prms=500W) with external fan (details see Enclosure ID 07-02)
- 265Vac Output: Turn on: 16.7A, 5 Sec, Turn off : 10.4A, 495 Sec (Prms=500W) with external fan (details see Enclosure ID 07-02)
- 170Vac, Output: Turn on: 20.9A, 3 Sec, Turn off : 10.3A, 297 Sec (Prms=500W) with external fan (details see Enclosure ID 07-02)
- 265Vac , Output: Turn on: 20.9A, 3 Sec, Turn off : 10.3A, 297 Sec (Prms=500W) with external fan (details see Enclosure ID 07-02)

**Additional Standards**

The product fulfills the requirements of: N/A

**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
Equipment rating marking – ratings	"Input Ratings (voltage, frequency/dc, current/power)", "Output Ratings (voltage, frequency/dc, current/power)"
Fuses – replaceable by skilled person	(component ID: F1,F2), Ratings (16A), "Ratings (16A, 250V)", and (symbol of required characteristics) located on or adjacent to fuse or fuseholder or in service manual.
Class I equipment -Terminal for main protective earthing	Provided adjacent to the main protective earthing terminal  (IEC 60417-5019)