

## 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>	Buffer Module
<b>Model:</b>	ZBM20-abcdeXXXXX  (where a can be 12 or 15 or 24; b can be "/" or blank; c can be L or A or blank; d can be T or blank; e can be CO or CO2 or blank; x can be blank or any alphanumeric character that is non safety related information)
<b>Rating:</b>	ZBM20-12bcdeXXXXX Input: 11.5-14.4 VDC, 20 A Output: 11.0 VDC, 20 A Buffer Time: 20 A/0.38 s (typ)  ZBM20-15bcdeXXXXX Input: 14.4-18 VDC, 20 A Output: 13.8 VDC, 20 A Buffer Time: 20 A/0.38 s (typ)  ZBM20-24bcdeXXXXX Input: 23-30 VDC, 20 A Output: 22.4 VDC/VIN-1, 20 A Buffer Time: 20 A/0.38 s (typ)
<b>Applicant Name and Address:</b>	TDK-LAMBDA SINGAPORE PTE LTD #06-01/08

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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: Edi Andrianto / Raymond Chia / Project Handler      Reviewed By: Ming Yuo Chai / 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 equipment is a buffer module that consists of electronic components mounted on PWB intended for building-in.

**Model Differences**

Refer to Enclosure Id 07-02.

**Test Item Particulars**

Classification of use by	Ordinary person
Supply Connection	External Circuit - not Mains connected ES1
Supply % Tolerance	None
Supply Connection – Type	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)	other: to be determined in the end product
Class of equipment	Not classified
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer’s specified maximum operating ambient (°C)	70
IP protection class	IP N/A
Power Systems	N/A
Altitude during operation (m)	5000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	0.87

**Technical Considerations**

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer’s specification of : 70 °C

- Mains supply tolerance (%) or absolute mains supply values : No direct connection
- The Risk Group of a lamp or lamp system (including LEDs) is : Exempt
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- The product was investigated to the following additional standard : EN 62368-1:2014 + A11:2017, BS EN 62368-1:2014 + A11:2017
- Heating test was performed at different mounting position. See Enclosure Id 07-01 for details.

**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 investigated Pollution Degree is : 2
- The following end-product enclosures are required : Fire, Mechanical
- The power supply was evaluated to be used at altitudes up to : "5,000 m"
- Heating test shall be reconsidered during end product evaluation.

**Additional Information**

Tests performed on Buffer Module, Model ZBM20-24bcdexxxxx were considered as representative to Buffer Module, Models ZBM20-12bcdexxxxx and ZBM20-15bcdexxxxx.

**Additional Standards**

The product fulfills the requirements of: EN 62368-1:2014 + A11:2017, BS 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
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), Ratings (2.5 A), "Ratings (2.5 A, 125 V)", and (symbol of required characteristics) located on or adjacent to fuse or fuseholder or in service manual.

**Special Instructions to UL Representative**

N/A