

## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
<b>Certification Type:</b>	Component Recognition
<b>CCN:</b>	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
<b>Product:</b>	DC-DC Converter
<b>Model:</b>	VRB2405LD-15WR3, VRB2412LD-15WR3, VRB2415LD-15WR3, VRB2424LD-15WR3.
<b>Rating:</b>	Input: 18-36Vdc, 1.1A Output: See supplement 7-03 Model list for detail.
<b>Applicant Name and Address:</b>	MORNSUN GUANGZHOU SCIENCE & TECHNOLOGY LTD 5 KEHUI ST 1 KEHUI DEVELOPMENT CENTER SCIENCE AVE, GUANGZHOU SCIENCE CITY LUOGANG DISTRICT GUANGZHOU GUANGDONG 510000 CHINA

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.

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Reviewed by: Roy Xie

**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 unit covered in this report is a DC-DC Converter (building-in type) used for information technology equipment; Input circuit and Output circuit are SELV circuit. Function insulation provided between the input and output circuits.

This DC-DC converter shall only be connected to secondary circuit which is isolated from any primary hazardous voltage circuit by double or reinforced insulation;

**Model Differences**

All models are identical in electrical, mechanical, physical construction except for model number; the rated voltage and current of output, parameter of components are difference.

Refer to supplement 7-03 for details.

**Technical Considerations**

- 1. Equipment mobility : for building-in
- 1. Connection to the mains : not directly connected to the mains
- 1. Operating condition : continuous
- 1. Access location : To be determined in the end product
- 1. Over voltage category (OVC) : OVC II
- 1. Mains supply tolerance (%) or absolute mains supply values : No direct connection
- 1. Tested for IT power systems : No
- 1. IT testing, phase-phase voltage (V) : N/A
- 1. Class of equipment : Not classified
- 1. Considered current rating of protective device as part of the building installation (A) : To be determined in the end product
- 1. Pollution degree (PD) : PD 2
- 1. IP protection class : IP X0
- 1. Altitude of operation (m) : up to 2000

- 1. Altitude of test laboratory (m) : less than 2000
- 1. Mass of equipment (kg) : Approx. 0.026
- 1. The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: Max. Operating temperature are 75 degree C (max. load with output current) and 85 degree C (60% load with output current),
- 1. The means of connection to the mains supply is: not directly connected to the mains
- 1. The product is intended for use on the following power systems: not directly connected to the mains
- 1. The equipment disconnect device is considered to be: considered in end system
- 1. 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:

- 1. The end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-Earthed Dead Metal: \_64.2\_\_ Vrms, \_129\_\_ Vpk, Primary-SELV: \_66.1\_\_ Vrms, \_132\_\_ Vpk
- 1. The following end-product enclosures are required: Mechanical, Fire, Electrical
- 1. The unit is considered as functional insulation and intended to be installed in isolated secondary circuit which is separated from primary circuit by Reinforced or Double insulation.
- 1. The following secondary output circuits are SELV: output
- 1. The following secondary output circuits are at non-hazardous energy levels: output
- 1. The power supply terminals and/or connectors are: Suitable for factory wiring only
- 1. The investigated Pollution Degree is: 2
- 1. The following magnetic devices (e.g. transformers or inductor) are provided with an OBJ2 insulation system with the indicated rating greater than Class A (105°C): T71 (Class B)

**Additional Information**

N/A

**Markings and instructions**

Clause Title	Marking or Instruction Details
Power rating - Ratings (Optional)	Ratings (voltage, dc symbol, current)
1.7.1 Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
1.7.1 Power rating - Model	Model Number

**Special Instructions to UL Representative**

N/A

**Production-Line Testing Requirements**

**Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.**

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
N/A						

**Earthing Continuity Test Exemptions - This test is not required for the following models:**

All models

**Electric Strength Test Exemptions - This test is not required for the following models:**

All models

**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:**


**Sample and Test Specifics for Follow-Up Tests at UL**

Model	Component	Material	Test	Sample(s)	Test Specifics
N/A					