

## 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-(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>	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
<b>Product:</b>	Switching Power supply
<b>Model:</b>	1) LWT15H-5FF 2) LWT15H-522 3) LWT15H-525 4) LWT15H-522/TSK
<b>Rating:</b>	<p>Input 100-240 VAC, 0.6 A, 50/60 Hz</p> <p>Output:</p> <p>1) LWT15H-5FF 5 VDC, 3 A, +15 VDC, 0.6 A, -15 VDC, 0.4 A</p> <p>2) LWT15H-522 5 VDC, 3 A, +12 VDC, 0.6 A, -12 VDC, 0.4 A</p> <p>3) LWT15H-525 5 VDC, 3 A, +12 VDC, 0.6 A, -5 VDC, 0.4 A</p> <p>4) LWT15H-522/TSK 5 VDC, 1 A, +12 VDC, 0.1 A, -12 VDC, 0.1 A</p> <p>Total Output Power: 17 W</p>
<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.

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Prepared By: Daniel Hsueh / Project Handler      Reviewed By: Tetsuo Iwasaki / 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**

Switching power supply for use in general office equipment (host equipment is not specified).

**Model Differences**

All the models are identical except output voltage rating, transformer (refer to table 4.1.2), output current rating and some additional circuit below.

LWT15H-522/TSK - Identical to model LWT15H-522 except for output current rating and some secondary components (C15, D10, D13) related to variance of current rating.

**Test Item Particulars**

Classification of use by	Ordinary person (See OVERVIEW OF EMPLOYED SAFEGUARDS)
Supply Connection	AC Mains
Supply % Tolerance	+10%/-15%
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 to Enclosure Id. 7-02.
IP protection class	IP is not classified (for building-in)
Power Systems	TN
Altitude during operation (m)	Up to 3000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	Approximately 0.22

**Technical Considerations**

- The product was submitted and evaluated for use at the maximum ambient temperature (T<sub>ma</sub>) permitted by the manufacturer's specification of : Refer to output derating curve in Enclosure Id. 7-02.
- 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%/-15%
- Humidity test was performed under tropical climates condition.

### 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: 272 Vrms, 610Vpk
- The following output circuits are at ES1 energy levels : All outputs of all models
- The following output circuits are at PS3 energy levels : All outputs of all models
- 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 : not been conducted
- The following input terminals/connectors must be connected to the end-product supply neutral : CN1 (3pin)
- The following end-product enclosures are required : Electrical, Fire
- The following magnetic devices (e.g. transformers or inductor) are provided with an IEC60085 (equipment to UL1446) insulation system with the indicated rating greater than Class A (105°C) : Transformer T1 (Class 130(B))
- The equipment is suitable for direct connection to : AC mains supply
- Earth terminal provided on Connector (CN1) has not been evaluated as protective earthing terminal. This component is intended to be connected to a protective earth via earthed parts of end-product.
- Classification of PIS has not been conducted. Therefore, all electrical components and conductors including printed wirings were assumed to be arcing/resistive PIS.
- 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.
- Temperature measurement were performed according to the maximum operating temperature, mounting direction and load conditions specified in instruction manual and output derating curve.
- Line to Line Capacitor (C1) may have variations in capacitance up to 0.47 uF. Therefore, consideration shall be given in controlling the capacitance value in the end-product application with respect to capacitance discharge issue.
- Primary to Ground Capacitors (C3, C5, C6) may have variations in capacitance up to 3300pF (for C3) and 4700pF (for C5, C6). Therefore, consideration shall be given in controlling the capacitance values in end product application with respect to touch Current issue.

### Additional Information

Unless otherwise specified, tests were performed on model LWT15H-5FF as representative other models.

Maximum Normal Load during the tests defined as below:

Condition A (for LWT15H-5FF)

5 Vdc, 3 A; +15 Vdc, 0.134 A

Condition B (for LWT15H-5FF)

5 Vdc, 0.4 A; +15 Vdc, 0.6 A; -15 Vdc, 0.4 A

Condition C (for LWT15H-522)

5 Vdc, 3 A; +12 Vdc, 0.167 A

Condition D (for LWT15H-522)

5 Vdc, 1 A; +12 Vdc, 0.6 A; -12 Vdc, 0.4 A

Condition E (for LWT15H-525)

5 Vdc, 1.56 A; +12 Vdc, 0.6 A; -5 Vdc, 0.4 A

<b>Additional Standards</b>	
The product fulfills the requirements of: CSA C22.2 NO. 60950-1-07 - Edition 2 - Revision Date 2014/10/01, UL 60950-1 - Edition 2 - Revision Date 2019/05/09	
<b>Markings and Instructions</b>	
Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listees or Recognized companys name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number
Fuses – replaceable by skilled person	(component ID: F1), Ratings (T2.5A), "Ratings (T2.5A, 250V)" located on or adjacent to fuse or fuseholder or in service manual.