

## UL TEST REPORT AND PROCEDURE

|                                    |   |
|------------------------------------|---|
| <b>Standard:</b>                   | UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements)<br>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>                    | Switching Power Supply  |
| <b>Model:</b>                      | LCC250-24U-4403   |
| <b>Rating:</b>                     | AC Input: 100-240V, 3.5A max., 50 / 60Hz<br>DC Input: 100-300V, 3.5A max.<br><br>DC Output: +24V, 10.4A max, max 250W (for AC Input)<br>DC Output: +24V, 8.33A max, max 200W (for DC Input)   |
| <b>Applicant Name and Address:</b> | ASTEC INTERNATIONAL LTD<br>16TH FL, LU PLAZA, KWUN TONG, 2 WING YIP ST,<br>KOWLOON HONG KONG  |

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: Brian Wong

Reviewed by: Steve Chiu

### 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

1. The equipment is class I building-in supply intended for information technology products.
2. When installing the equipment, all requirements of the mentioned standard must be fulfilled.
3. The switching power supply has been evaluated for use in pollution Degree 2 environment, altitude up to 5100 m above the sea level. Altitude factor is 1.51.
4. The enclosure is rated IP64. The clearance and creepage measurement is conducted based on pollution degree 2 environment according to Table 2 in UL60950-22.
5. The model base-plate temperature is rated for use in 85 °C at full rated output loading.
6. The model ambient temperatures are rated for use in 55 °C with speed 2m/s at full rated output loading, and for used in 85°C with speed 2m/s at half rated output loading.
7. This product maintains reinforced insulation between input circuit to output circuit and basic insulation between input circuit to earthed metal enclosure.

### Model Differences

N/A

### Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : To be considered in end system
- Operating condition : continuous
- Access location : operator accessible
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10% for AC input
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Class I (earthed)
- Considered current rating of protective device as part of the building installation (A) : See cover page
- Pollution degree (PD) : PD 2
- IP protection class : IP 64
- Altitude of operation (m) : less than or equal to 5100
- Altitude of test laboratory (m) : <2000

- Mass of equipment (kg) : <18 kg
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 55°C with speed 2m/s at full loading, 85°C with speed 2m/s at half loading, baseplate 85°C at full loading.
- The means of connection to the mains supply is: It should be considered in end system
- The product is intended for use on the following power systems: TN
- The equipment disconnect device is considered to be: Must be considered at end system.
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: Sec. pin of C70
- 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 Production-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-SELV: 334.5 Vrms, 442 Vpk, Primary-Earthed Dead Metal: 334 Vrms, 451 Vpk
- The following secondary output circuits are SELV: 24 Vdc output
- The following secondary output circuits are at hazardous energy levels: 24 Vdc output
- The following secondary output circuits are Limited Current Circuits: Sec. pin of C70
- The power supply terminals and/or connectors are: Not investigated for field wiring
- 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 magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105°C): Transformer T1, T3 and L4 (Class F)
- The following end-product enclosures are required: Mechanical, Fire, Electrical
- The equipment is suitable for direct connection to: AC and DC mains supply