

## 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>	Switching Power Supply
<b>Model:</b>	DS1600SPE-3-XXX (where -XXX can be any alphanumeric character, symbol or blank that represents customer identity that do not affect safety)
<b>Rating:</b>	At Input: 100-127Vac, 10.8A max, 50/60Hz DC Output: 800W +12V, 66.7A max +12Vsb, 3.5A max  At Input: 200-240Vac, 10.8A max, 50/60Hz DC Output: 1600W +12V, 133.3A max +12Vsb, 3.5A max
<b>Applicant Name and Address:</b>	ASTEC INTERNATIONAL LIMITED 16TH FL LU PLAZA 2 WING YIP ST KWUN TONG 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**

The equipment is a switching power supply, intended for building in as a component used in information technology equipment which employs with isolating transformers. Reinforced insulation is provided between primary and secondary. Basic insulation is provided between primary and PE (Protective Earth).

**Model Differences**

N/A

**Technical Considerations**

- Equipment mobility : for building-in
- Connection to the mains : pluggable A
- Operating condition : continuous
- Access location : To be considered in end system
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10%
- 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) : 20A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : 5000m or 16400ft
- Altitude of test laboratory (m) : less than 2000 meters
- Mass of equipment (kg) : 1
- The clearance and creepage distances have additionally been assessed for suitability up to 5000m or 16400ft elevation.
- The product was submitted and evaluated for use at the maximum ambient temperature (T<sub>ma</sub>) permitted by the manufacturer's specification of: At 100-140Vac input: 50°C for 800W output Forward and Reverse fan condition; 60°C for 640W output Forward and Reverse fan condition; 65°C for 560W output Forward fan condition. At 200-240Vac input: 40°C for 1600W output Reverse fan condition; 50°C for 1600W output Forward fan condition; 50°C for 1500W output Reverse fan condition; 60°C for 1280W output Forward and Reverse fan condition; 65°C for 1120W output Forward fan condition.
- The means of connection to the mains supply is: Pluggable A, no cord set provided
- The product is intended for use on the following power systems: TN
- The equipment disconnect device is considered to be: Appliance inlet
- The product was investigated to the following additional standards: EN 60950-1:2006 + A11:2009 +A1:2010 + A12:2011+ A2:2013 (which includes all European national differences, including those specified in this test report).
- 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:

- One fan is provided on the unit near AC inlet which have two option Forward and Reverse condition. Forward fan condition, fan is blowing air from output side to input side of the power supply and on Reverse fan condition, fan is blowing air from input side to output side of the power supply.
- The equipment was not evaluated for end system mounting. When installed in the end system, proper evaluation should be considered that all relevant standard must be fulfilled.
- The power supply has a secondary output (+12V) exceeding 240VA. When installing into the end system, care must be taken that this secondary output and the appropriate wires may not be touched.
- 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-Earthed Dead Metal: 336 Vrms, 758 Vpk, Primary-SELV: 349.4 Vrms, 769 Vpk
- The following secondary output circuits are SELV: +12V, +12Vsb
- The following secondary output circuits are at hazardous energy levels: +12V
- The following secondary output circuits are at non-hazardous energy levels: +12Vsb
- The power supply terminals and/or connectors are: Not investigated for field wiring. The input terminal of the equipment is provided with AC inlet compliant to IEC60320.
- 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): T100, T101, T110 (Class F)
- The following end-product enclosures are required: Mechanical, Fire, Electrical
- The equipment is suitable for direct connection to: AC mains supply
- The maximum investigated branch circuit rating is: 20 A