

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2011-12-19 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2011-12 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Component Recognition
CCN:	QQGQ2, QQGQ8 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Product:	Switching Power Supply for Building-In
Model:	NPT42-M, NPT43-M, NPT44-M
Rating:	Input: 100 - 240 Vac, 1.8 A, 50/60 Hz Input Power must be less than 74Watts Model NPT42-M Output: Output: +5 Vdc, 8.0 A MAX +12 Vdc, 3.0 A MAX -12 Vdc, 0.7 A MAX Model NPT43-M Output: +5Vdc, 8.0A MAX +15Vdc, 2.4A MAX -15Vdc, 0.7A MAX Model NPT44-M Output: +5Vdc, 8.0A MAX +24Vdc, 1.5A MAX +12Vdc, 0.7A MAX Maximum Output Power 45 W Convection Cooling 55 W Forced Air Cooling
Applicant Name and Address:	ASTEC INTERNATIONAL LTD 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.

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Report Reference #

E186249-A197-UL

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

Model NPT42-M, NPT43-M and NPT44-M are an AC/DC switch mode power supplies designed to deliver 45 W rated output power during natural convection cooling and 55 W on forced air cooling.

This equipment has been evaluated for use in Class I or Class II application. When the power supply is used as Class II equipment, all PE traces and components connected to PE on the primary side will be treated as primary part for spacing and insulation considerations.

Model Differences

Models NPT43-M and NPT44-M are identical to model NPT42-M except output rating and Transformer T1.

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : To be considered in the end system
- Operating condition : continuous
- Access location : Equipment is for building-in. Must be checked in the 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) : -
- Class of equipment : Class I (earthed) / Class II (To be considered in the end system)
- Considered current rating of protective device as part of the building installation (A) : 2.0
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : <=4000
- Altitude of test laboratory (m) : <500
- Mass of equipment (kg) : <1kg
- This power supply has been evaluated for use in 50 degree C maximum ambient temperature at 45W load with natural convection cooling and at 55W load with 30CFM cooling. Output power derates 2.5% per degree from 50 degree C to 80 degree C ambient temperature.

- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: 50 °C (Output derates 2.5% per degree from 50degC to 80degC for loading condition 2, considered worst condition, please see Additional Information for details.)
- The means of connection to the mains supply is: AC input terminal
- The product is intended for use on the following power systems: TN
- The product was investigated to the following additional standards: EN 60950-1:2006/ A11:2009/A1:2010/A12:2011(which includes all European national differences, including those specified in this test report).
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: NPT42-M : +5Vdc output, +12Vdc output, -12Vdc output ; NPT43-M : +5Vdc output, +15Vdc output, -15Vdc output ; NPT44-M : +5Vdc output, +24Vdc output, +12Vdc output
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual
- This equipment is not an electromedical equipment intended to be physically connected to a patient.

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 clearances and creepage distances have additionally been assessed for suitability up to 4000m (13,000 ft.).
- This power supply has been evaluated for use in Class I or Class II equipment as defined in UL 60950-1 and CAN/CSA-C22.2 No. 60950-1, Second Edition. When the power supply is used as Class II equipment, all PE traces and components connected to PE on the primary side will be treated as primary part for spacing and insulation considerations.
- The following Production-Line tests are conducted for this product: Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of: NPT42-M: Primary-Earthed Dead Metal: 262Vrms, 634Vpk , Primary-SELV: 266Vrms, 634Vpk; NPT43-M: Primary-Earthed Dead Metal: 257.2Vrms, 548Vpk , Primary-SELV: 262.4Vrms, 557Vpk; NPT44-M: Primary-Earthed Dead Metal: 257.6Vrms, 504Vpk , Primary-SELV: 274.7Vrms, 557Vpk
- The following secondary output circuits are SELV: NPT42-M: +5Vdc output, +12Vdc output, -12Vdc output; NPT43-M : +5Vdc output, +15Vdc output, -15Vdc output ; NPT44-M : +5Vdc output, +24Vdc output, +12Vdc output
- The following secondary output circuits are at non-hazardous energy levels:NPT42-M: +5Vdc output, +12Vdc output, -12Vdc output; NPT43-M : +5Vdc output, +15Vdc output, -15Vdc output ; NPT44-M : +5Vdc output, +24Vdc output, +12Vdc output
- The following secondary output circuits are Limited Current Circuits: Sec pin of Y1 Cap for models Models NPT42-M, NPT43-M and NPT44-M
- 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: Not 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): T1 (Class F)
- The following end-product enclosures are required: Electrical , Fire , Mechanical

- The maximum continuous power supply output (Watts) relied on forced air cooling from: 30 CFM forced air cooling at 55W
- The equipment is suitable for direct connection to: AC mains supply
- Refer to the General Product Information for the maximum allowable output power, voltage and current. See enclosure IDX-01 for ventilation set-up.
- The disconnection from the line must be considered in the end system.
- The equipment is classified as Level 3 as defined by UL 60950-1 and CAN/CSA-C22.2 No. 60950-1-07 Second Edition.
- This equipment was not evaluated for system mounting. When installed in the end system, proper evaluation should be considered.