

UL TEST REPORT AND PROCEDURE

Standard:	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)
Certification Type:	Listing
CCN:	QQGQ, QQGQ7 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Product:	AC Adapter for direct plug-in
Model:	700-014340-XXXX, where XXXX can be any alphanumeric characters representing for different customer identity.
Rating:	Input: 100-240 Vac, 50/60Hz, 1.2 A max. Output: 5Vdc, 3A max./ 9Vdc, 3A max./ 15Vdc, 3A max./ 20Vdc, 2.25A max.
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.

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 / Project Handler

Reviewed by: Steve Chiu / 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

AC power adapter for direct plug-in, Class II product, used for Information Technology Products, switch mode construction with plastic enclosure. This adapter is not intended for repairing. Maximum operating ambient (T_{mra}):40 °C. Model 700-014340-0000 is provided with US input blade and model 700-014340-0100 is provided with China input blade and 700-014340-0200 is provided with EU input blade.

Model Differences

The construction of model 700-014340-0100 and 700-014340-0200 are identical to 700-014340-0000 except for provided with China and EU input blade.

Technical Considerations

- Equipment mobility : direct plug-in
- Connection to the mains : pluggable A
- Operating condition : continuous
- Access location : operator accessible
- 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 II (double insulated)
- Considered current rating of protective device as part of the building installation (A) : 20
- Pollution degree (PD) : PD 2
- IP protection class : IP 20
- Altitude of operation (m) : 5000
- Altitude of test laboratory (m) : <500
- Mass of equipment (kg) : 0.96
- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: 40 °C
- The means of connection to the mains supply is: Pluggable A
- The product is intended for use on the following power systems: TN

- The equipment disconnect device is considered to be: Plug
- 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 accessible locations (with circuit/schematic designation) are within a limited current circuit: Sec pin of C21
- The following are available from the Applicant upon request: Installation (Safety) Instructions
- The power supply in this equipment was: Not investigated. A test report for the power supply may be required when submitting this CB Report to a National Certification Body (NCB) to obtain a national mark.

Additional Information

1.1.2-Additional requirements:

Exposure to extreme temperature, excessive dust, moisture or vibration; flammable gases; and corrosive or explosive atmospheres:

- This equipment is intended to operate in a normal environment (Office and home).

Plug test for US version under UL1310 is considered under project 4788038582.

Plug test for EU version under EN50075:1990 is considered under report reference no. 17PIS06079 11.


Plug test for CN version should be further evaluated if requested by NCB.

This equipment is intended to operate in a normal environment (Office and home) and at elevations up to 5000 meters only.

Additional Standards

The product fulfills the requirements of: EN 60950-1:2006 + A1:2010 + A11:2009 + A12:2011 + A2:2013

Markings and instructions

Clause Title	Marking or Instruction Details
Power rating - Ratings	Ratings (voltage, frequency/dc, current)
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Power rating - Class II symbol	Symbol for Class II construction  (60417-2-IEC-5172)
Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.

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
All models covered in this report	Transformer T1	-	Primary to secondary	300 0	4243	1

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

All models covered in this report

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

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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:

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Sample and Test Specifics for Follow-Up Tests at UL

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

1.5.1	TABLE: list of critical components					Pass
Object/part or Description	Manufacturer/ trademark	type/model	technical data	Product Category CCN(s)	Required Marks of Conformity	Supplement ID
Fuse (F1)	Conquer Electronics	MST	Rated 3.15A, 250V	JDYX2	UL (E82636)	
Alternate	Walter Electronic	2010	Rated 3.15A, 250V	JDYX2	UL (E56092)	
Bridging Capacitor (C10, C27)	Kunshan Micro Capacitors Electronic	E	Max. 100pF, min. 250Vac, min. 125°C Marked with Y1. Complied with 21 damp heat condition.	FOWX2	UL (E252211)	
Alternate	Interchangeable	Interchangeable	Max. 100pF, min. 250Vac, min. 125°C Marked with Y1. Complied with 21 damp heat condition.	FOWX2	UL	
Bridging Capacitor (C21)	Kunshan Micro Capacitors Electronic	E	Max. 1nF, min. 250Vac, min 125°C. Marked with Y1. Complied with 21 damp heat condition.	FOWX2	UL (E252211)	
Alternate	Murata Mfg Co Ltd	KL	Max. 1nF, min. 250Vac, min 125°C. Marked with Y1. Complied with 21 damp heat condition.	FOWX2	UL (E37921)	
Alternate	Interchangeable	Interchangeable	Max. 1nF, min. 250Vac, min 125°C. Marked with Y1. Complied with 21 damp heat condition.	FOWX2	UL	
X2- Capacitor (C1)	Xiamen Faratronic Co Ltd	MKP62	Max. 560nF, min. 305V, Marked with X2. Complied with 21 damp heat condition.	FOWX2	UL (E186600)	
Alternate	Interchangeable	Interchangeable	Max. 560nF, min. 305Vac, Marked with Y1. Complied with 21 damp heat condition.	FOWX2	UL	
Bridge Rectifier (D2)	Interchangeable	Interchangeable	Rated min. 3A, min. 800V	--	Tested as part of the unit.	
Electrolytic Capacitor (C2)	Interchangeable	Interchangeable	Max. 68uF, min. 400V, min. 105°C	--	Tested as part of the	

					unit.	
Opto-coupler (U3)	Everlight	EL101X series	5000V isolation	FPQU2	UL (E214129)	
Alternate	Lite-on	LTV-100X series (where X is any numbers) which do not affect safety)	5000V isolation	FPQU2	UL (E113898)	
Alternate	Toshiba	TLP385	5000V isolation	FPQU2	UL (E67349)	
Alternate	Interchangeable	Interchangeable	5000V isolation	FPQU2	UL	
Power Transistor (Q1)	Interchangeable	Interchangeable	Rated min. 11.1A, min. 650V	--	Tested as part of the unit.	
Common Mode Choke (L1)	Astec/ Artesyn	801-007672-XXXX (X is any number)	Rated min. 130 °C. Constructed with Magnet Wire (OBMW2), min. rated 130 °C.	--	Tested as part of the unit.	
Power Transformer (T1)	Astec/ Artesyn	801-007671-XXXX (X is any number)	Class F Insulation system under E94225, OBJY2, designated 155-10C	XORU3	(E127000)	
AC inlet Insulator	Sabic Japan L L C	Valox FR1	VTM-0, min. 0.25mm thick. Overall min. 26.8 by 16.8mm	QMFZ2	UL (E207780)	
Alternate	Formex, DIV of Illinois Tool Works Inc.	Formex-GK-10	VTM-0, min. 0.25mm thick. Overall min. 26.8 by 16.8mm	QMFZ2	UL (E121855)	
Top Insulators	Toray Industries Inc	Lumirror (#) series	VTM-2, min. 0.25mm thick. Overall min. 49.8 by 34.5mm	QMFZ2	UL (E86511)	
Bottom Insulators	Toray Industries Inc	Lumirror (#) series	VTM-2, min. 0.25mm thick. Overall min. 46.38mm by 42.8mm	QMFZ2	UL (E86511)	
Insulation tape using with top insulator	3M	1350F-1	130 °C.	OANZ2	UL (E17385)	
Alternate	Four Pillars Enterprise	MY9Y	130 °C.	OANZ2	UL (E50292)	
Insulation tape using with bottom insulator	3M	1350T-3	130 °C.	OANZ2	UL (E17385)	
Insulation tape on T1	YAHUA Sticking	CT-280/	130 °C.	OANZ2	UL	

	Tape	CT-284			(E165111)	
Plastic Enclosure	Sabic Japan L L C	CH 6410	Box type, two pieces construction, rated V-0, 105°C, min. 1.7 mm thick. Overall 58 by 40.2 by 27mm, secured together by Ultrasonic weld.	QMFZ2	UL (E207780)	
AC inlet blades	Interchangeable	Interchangeable	Nickel plated copper alloy, non-polarized, min. 9 mm apart from edge of enclosure. See enclosure ID7-01 for overall dimension.	-	-	
USB output connector	Interchangeable	Interchangeable	Plastic material rated min. V-1	QMFZ2	UL	
PWB	Interchangeable	Interchangeable	V-0, 130 deg C	ZPMV2	UL	
Label	Interchangeable	Interchangeable	Suitable for use on each type of surface to which applied, rated for maximum surface temperature specified. All marking labels not printing by the manufacturer should be authorized label suppliers under (PGAA).	PGDQ2, PGJI2	UL	

Enclosures

<u>Type</u>	<u>Supplement Id</u>	<u>Description</u>
Photographs	3-01	Overall View of Model 700-014340-XXXX
Photographs	3-02	Overall View of Model 700-014340-XXXX
Photographs	3-03	Overall View of Model 700-014340-XXXX
Photographs	3-04	Overall View of Model 700-014340-XXXX
Photographs	3-05	Internal View of Model 700-014340-XXXX
Photographs	3-06	Internal View of Model 700-014340-XXXX
Photographs	3-07	Internal View of Model 700-014340-XXXX
Photographs	3-08	Internal View of Model 700-014340-XXXX with EMI shield removed
Photographs	3-09	Bottom View of PWB
Photographs	3-10	Internal View of Model 700-014340-XXXX with EMI shield removed
Photographs	3-11	EMI shielding
Photographs	3-12	EMI shielding
Photographs	3-13	Plug portion for US, EU and CN version
Schematics + PWB	5-01	PWB layout
Miscellaneous	7-01	Dimension drawing of US plug