

UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 4th Ed, 2025-07-31 (Audio/Video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1:25, 4th Ed, 2025-07-31 (Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Component Recognition
CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	Power Module
Model:	AIF13WAC-XXXX (where X is blank or any alphanumeric characters for marketing purpose)
Rating:	Input: 100-240VAC,50/60Hz, 8A Output: 48VDC, 12.8A Max. Output power: 600W 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.

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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: Joyce Lim / Project Handler

Reviewed By: Tony Yeung / 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

The equipment is a built-in type Power Module, intended for building in as a component used in information technology equipment which employing with an isolation transformer.
 Reinforced insulation is provided between AC input / HVDC (where HVDC is primary circuit) and secondary. Basic insulation is provided between primary and Metal Baseplate.

Model Differences

N/A

Test Item Particulars

Product group	: built-in component
Classification of use by	: Ordinary person Instructed person Skilled person
Supply connection	: AC Mains
Supply tolerance	: +10%/-10%
Supply connection - type	: To be considered in end system
Considered current rating of protective device ...	: External Fuse 10 A;
Equipment mobility	: for building-in
Overvoltage category (OVC)	: OVC II
Class of equipment	: Not Classified
Special installation location	: N/A
Pollution degree (PD)	: PD 2
Manufacturer's specified Tma	: Metal Baseplate at 100 °C
IP protection class	: IPX0
Power systems	: TN TT
Altitude during operation (m)	: 5000 m
Altitude of test laboratory (m)	: 2000 m or less
Mass of equipment (kg)	: <0.5kg kg

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer’s specification of : 100 °C at Metal Baseplate

- The product is intended for use on the following power systems : TN, TT
- Considered current rating of protective device as part of the building installation (A) : 10A for external fuse
- Mains supply tolerance (%) or absolute mains supply : +10%/-10%
- The equipment disconnect device is considered to be : To be considered in end system
- 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 product-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 : Primary-Earthed Dead Metal: 394.1 Vrms, 564.0 Vpk, , Primary-Secondary: 389.8 Vrms, 564.0 Vpk
- The following output circuits are at ES1 energy levels : All outputs
- The following output circuits are at PS3 energy levels : All outputs
- The maximum investigated branch circuit rating is : N/A
- The investigated Pollution Degree is : 2
- The following end-product enclosures are required : Electrical, Fire, Mechanical
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJ2 insulation system with the indicated rating greater than Class A (105°C) : T202 (Class F)
- The equipment is suitable for direct connection to : AC mains supply
- Component fault test was conducted with External fuse, manufacturer Conquer, type: UBM-A 010, 250Vac, 10A. Additional evaluation should be considered if other type of fuse is employed in end system.
- A readily accessible disconnect device shall be incorporated in the end system supplying input power to this power supply
- The Input terminal & HVDC terminal of this power supply is considered as ES3. During operation, the operator must not touch this voltage.
- The product maintains basic insulation provided between primary circuit and metal baseplate & maintain reinforced insulation provided between primary circuit and secondary circuit.
- Metal baseplate should be connected to Earth during end-system installation, proper bonding to be considered in the end-system.
- Tests conducted with External Forced Air Cooling by SUNON, PF40281BX-xxxx, DC12V, 10.80W and hotspot temperature of Metal Baseplate at 100 °C and 85°C with heatsink. Refer to Enclosure Id 7-04 for test set up and dimension drawing of heatsink

Additional Information

N/A

Markings and Instructions

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listee’s or Recognized Company’s name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number

Equipment rating marking – ratings	"Input Ratings (voltage, frequency/dc, current/power)", "Output Ratings (voltage, frequency/dc, current/power)"
Special Instructions to UL Representative N/A	

BD1.0	TABLE: Production-Line Testing Requirements					
BD1.1	Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.					
Model	Component	Removable parts	Test probe location	Test V rms	Test V dc	Test Time, s
All models	T202	N/A	Primary winding to Secondary winding	-	4000	1
All models	-	N/A	Input to Metal base PCB	-	2500	1
BD1.2	Earthing Continuity Test Exemptions – This test is not required for the following models:					
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BD1.3	Electric Strength Test Exemptions – This test is not required for the following models:					
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BD1.4	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.					
	N/A					

BE1.0	Sample and Test Specifics for Follow-Up Tests at UL				
Model	Component	Material	Test	Sample (s)	Test Specifics
N/A	--	--	--	--	--

4.1.2	TABLE: List of critical components					Pass
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Product Category CCN(s)	Mark(s) of conformity	Supplement ID
Lower Case/ Upper Case	SABIC Innovative Plastics US LLC (E121562)	ULTEM 1000	170C, V-0, Min. 0.9mm thickness. All colors except Natural. See Enclosure Id 7-01 and 7-02 for details.	QMFZ2	UL	
Y Capacitor (C1001, C1002)	Johanson Dielectrics Inc. (E472557)	502R30W Series	Max.470pF, Min.250V, Min. 125°C, Y2	FOWX2	UL	
Alternate	Holy Stone (E300818)	SCC2211X Series	Max.470pF, Min.250V. Min. 125°C, Y2	FOWX2	UL	
Alternate	Murata (E37921)	GF+GA35****GF**** ****(*:may be space, 0 to 9, A to Z)\$\$\$	Max.470pF, Min.250V, Min. 125°C, Y2	FOWX2	UL	
Alternate	Interchangeable	Interchangeable	Max.470pF, Min.250V, Min.Y2, Min. 125°C	FOWX2	UL	
Choke (L104)	Artesyn / ASTEC	801-008428	130 °C, See Enclosure Id 4-03 for details.	-	Tested as part of the unit	
Choke (L235)	Artesyn / ASTEC	801-008402-XXXX (X can be blank or any alphanumeric character not affecting safety)	130 °C, See Enclosure Id 4-04 for details.	-	Tested as part of the unit	
Power Transformer (T202)	Artesyn / ASTEC	801-008403	Class F insulation system under E94225 (OBJY2), designated 155-10C, See Enclosure ID 4-01 for construction details.	XORU3 (E127000)	Tested as part of the unit	

Aux Transformer (T1218)	Artesyn/ Astec	801-008405	Embedded in PCB, Min.130°C, PCB type and manufacturer see Enclosure ID 7-05.	-	Tested as part of the unit	
Alternate	Interchangeable	Interchangeable	Embedded in PCB, Min.130°C, PCB type and manufacturer see Enclosure ID 7-05.	-	Tested as part of the unit	
Isolated Driver IC (U200)	Infineon (E311313)	2EDS8265H, 2EDR8259H	Min.3000VAC isolation voltage	FPPT2	UL	
Alternate	TEXAS (E181974)	UCC21550 Series	Min.3000VAC isolation voltage	FPPT2	UL	
Alternate	Interchangeable	Interchangeable	Min.3000VAC isolation voltage, Min. 125 °C	FPPT2	UL	
Opto-coupler (U1219, U402, U403, U404, U405)	CT Microelectronics Far East Ltd (E364000)	CT101X-W Series, CT101X series, CT817 series, CT81X series	Min.3000VAC isolation voltage	FPQU2	UL	
Alternate	LITE-ON Technology Corporation (E113898)	LTV-1DXX Series, LTV-10XX series, LTV-817	Min.3000VAC isolation voltage	FPQU2	UL	
Alternate	VISHAY SEMICONDUCTOR GMBH (E76222)	VOL617A series, VO617A series	Min.3000VAC isolation voltage	FPQU2	UL	
Alternate	FAIRCHILD SEMICONDUCTOR CORP (E90700)	FODM10XX series, FOD817 series	Min.3000VAC isolation voltage	FPQU2	UL	
Alternate	EVERLIGHT ELECTRONICS CO LTD (E214129)	EL10XX Series, EL817	Min.3000VAC isolation voltage	FPQU2	UL	
Alternate	Interchangeable	Interchangeable	Min.3000VAC isolation voltage, Min. 125 °C	FPQU2	UL	

Insulation tape (between Control Board & L235)	3M COMPANY (E17385)	92, 1350F-1, 1318- 1, 13188Y-1, Super 10, 1350T-3	Min. 130°C, Min. 2 layers, Size Min. 17mm X 25mm.	OANZ2	UL	
Alternate	P LEO & CO LTD (E126174)	1K220, 1P801, 1K7170	Min. 130°C, Min. 2 layers, Size Min. 17mm X 25mm.	OANZ2	UL	
Alternate	TERAOKA SEISAKUSHO (E56086)	650S #25, 4916 #25	Min. 200°C, Min. 2 layers, Size Min. 17mm X 25mm.	OANZ2	UL	
Alternate	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD (E165111)	CT series, PZ series	Min. 130°C, Min. 2 layers, Size Min. 17mm X 25mm.	OANZ2	UL	
Alternate	SYMBIO INC (E50292)	35660, 35660Y	Min. 130°C, Min. 2 layers, Size Min. 17mm X 25mm.	OANZ2	UL	
Metal base PCB	Interchangeable	Interchangeable	V-0, min.130°C	ZPMV2	UL	
Other PCBs	Interchangeable	Interchangeable	V-0, min.130°C.	ZPMV2	UL	
Potting glue	Chengdu Taly Technology Co Ltd(E224183)	GA-0230-2 A/B,	Min. V-0; 150°C, Min.3.0mm thickness	QMFZ2	UL	
Alternate	DuPont Toray Specialty Materials Kabushiki Kaisha (E475670)	SE 4430 (e)	Min. V-0; 150°C, Min.5.3mm thickness	QMFZ2	UL	

Enclosures

Type	Supplement Id	Description
Photographs	03-01	Overall view Top
Photographs	03-02	Overall view Bottom
Photographs	03-03	Internal view 1
Photographs	03-04	Internal view 2
Photographs	03-05	Internal view 3
Photographs	03-06	Internal view 4
Diagrams	04-01	Specification for Transformer T202
Diagrams	04-02	Specification for Transformer T1218
Diagrams	04-03	Specification for Choke L104
Diagrams	04-04	Specification for Choke L235
Schematics + PWB	05-01	PCB layout for Main board
Schematics + PWB	05-02	PCB layout for control board
Schematics + PWB	05-03	Schematic circuit diagram
Manuals	06-01	User manual
Miscellaneous	07-01	Upper Case Dimension
Miscellaneous	07-02	Lower Case Dimension
Miscellaneous	07-03	Label artwork
Miscellaneous	07-04	Test setup and dimension drawing of heatsink
Miscellaneous	07-05	Special Instructions