

## UL TEST REPORT AND PROCEDURE

<b>Standard:</b>	UL 60950-1, 2nd Edition, 2007-03-27 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No. 60950-1-07, 2nd Edition, 2007-03 (Information Technology Equipment - Safety - Part 1: General Requirements)
<b>Certification Type:</b>	Listing
<b>CCN:</b>	QQGQ, QQGQ7 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
<b>Product:</b>	SWITCHING POWER SUPPLIES
<b>Model:</b>	FYxxxxyyy SERIES, where "xxx" represents output voltage rating multiplied by 10, "yyyy" represent output current rating in mA.  1) when "xxx"=120, "yyyy" = 8000, 8500, 9000, or 9900; 2) when "xxx"=126, "yyyy" = 8000, 8500, 9000, or 9900; 3) when "xxx"=135, "yyyy" = 8000, 8500, 9000, or 9900; 4) when "xxx"=150, "yyyy" = 8000, 8500, 9000, or 9900; 5) when "xxx"=170, "yyyy" = 5000, 6000, 6500, 7000,7500, 8000, 8500, 9000, or 9900; 6) when "xxx"=180, "yyyy" = 7000, 7500, 8000, 8500, 9000, or 9500; 7) when "xxx"=190, "yyyy" = 7000, 7500, 8000, 8500, 9000, or 9500; 8) when "xxx"=210, "yyyy" = 6000, 6500, 7000, 7500, 8000, 8500 or 9000; 9) when "xxx"=240, "yyyy" = 5500, 6000, 6500, 7000, 7500 or 8000; 10) when "xxx"=255, "yyyy" = 4500, 5000, 5500, 6000, 6500, 7000, or 8000; 11) when "xxx"=290, "yyyy" = 4500, 5000, 5500, 6000, 6500, or 7000; 12) when "xxx"=300, "yyyy" = 4500, 5000, 5500, or 6000; 13) when "xxx"=320, "yyyy" = 3500, 4000, 4500, 5000, 5500, or 6000; 14) when "xxx"=340, "yyyy" = 3500, 4000, 4500, 5000, 5500, or 6000; 15) when "xxx"=360, "yyyy" = 3500, 4000, 4500, 5000, 5500, or 6000; 16) when "xxx"=425, "yyyy" = 3000, 3500, 4000, 4500 or 5000; 17) when "xxx"=440, "yyyy" = 3000, 3500, 4000, or 4500; 18) when "xxx"=480, "yyyy" = 3000, 3500, or 4000; 19) when "xxx"=550, "yyyy" = 2500, 3000, or 3500; 20) when "xxx"=580, "yyyy" = 2500, 3000, or 3500;
<b>Rating:</b>	Input: 100-240 V~, 50/60 Hz, 3 Amp max. Output: See Enclosure_Miscellaneous 7-01
<b>Applicant Name and Address:</b>	FUYUAN ELECTRONIC CO LTD XIEWU VILLAGE, HENGSHAN SHIPAI TOWN DONGGUAN GUANGDONG 523335 CHINA

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 Underwriters Laboratories Inc. ('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 Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

Prepared by: Todd Zhong  
Underwriters Laboratories Inc.



Reviewed by: Lorenzo Iorio  
Underwriters Laboratories Inc.



**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**

Electronic components housed in a plastic enclosure.

**Model Differences**

See Enclosure\_Miscellaneous 7-01

**Technical Considerations**

- Equipment mobility : transportable
- Connection to the mains : pluggable A
- Operating condition : continuous
- Access location : operator accessible (except output)
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +6%, -10%
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : n.a.
- Class of equipment : Class I (earthed)
- Considered current rating (A) : 20

- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : < 2000 m
- Altitude of test laboratory (m) : < 2000 m
- Mass of equipment (kg) : 0.7
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 25°C
- The means of connection to the mains supply is: Detachable power cord, Pluggable A
- The product is intended for use on the following power systems: TN
- The equipment disconnect device is considered to be: Appliance inlet
- The following are available from the Applicant upon request: Specific data sheets for LED indicators that are class I and operate at wavelength in the 400-710 nm range.
- The output of the equipment may be at hazardous energy level.

**Additional Information**

Class II construction in a Class I equipment.

**Markings and instructions**

Clause Title	Marking or Instruction Details
Inter-connecting cables - Non-LPS or TNV	Non-LPS or TNV output connectors identify the type of circuit, intended cable type or relevant circuit characteristics. (Marking or Instruction)
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

Fuses - Non-operator access/soldered-in fuses	Unambiguous reference to service documentation for instructions for replacement of fuses replaceable only by service personnel
---	--

**Special Instructions to UL Representative**

1. Check spacings between L/N and PE, and across fuse as per minimum requirements indicated on Enclosure 5-01, PCB layout.
2. Verify that the L/N to PE capacitors (C3, C4, C5, C6) shall not be populated.
3. Inspect the transformer(s) listed in BD1.1 per AA1.1- (C). When the tests are conducted at other location, Inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in BD1.1 be conducted at the component manufacturer.

**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
--	Transformer PT1	--	Primary to Secondary	300 0	4200	1

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

all models

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

n.a.

**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.

**Sample and Test Specifics for Follow-Up Tests at UL**

Model	Component	Material	Test	Sample(s)	Test Specifics
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

**TABLE: List of Critical Components**

Object/part No.	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
1. Enclosure	SABIC INNOVATIVE PLASTICS	920(f1)	94V-0, 120 DegreeC,. approx. 2.5 mm thick. Overall :152mm by 59mm by 35mm.The bottom and top enclosure are fixed by ultrasonic welding.	QMFZ2	UL
2. Output cord set	KEMP ELECTRIC MFG LTD.	KE-05+SPT1 18AWG+SR9X7	Molded with following components	-	-
2a. Output cord	Various	Various	SPT-1 or SPT-2, 18AWG, Min. 105 Deg.C	ZJCZ	UL
2b.Output Cord Strain Relief	KEMP ELECTRIC MFG CO.,LTD	--	Min. V-2, Minimum 105 DegreeC. See Enclosure 4-06 for dimensions.	QMFZ2	UL
2c.Output Connector	KEMP ELECTRIC MFG CO.,LTD	--	PVC, minimum V-2, Minimum 85 DegreeC. Non-standard construction. Molded to output cord. See Enclosure 4-06 for dimensions.	QMFZ2	UL
3. Appliance Inlet	Various	Various	10 A, 250Vac	AXUT, AXUT2, RTRT2	UL,cUL
4. Current fuse, CF1	Various	Various	5A 250V	JDYX/7	UL,cUL
5. X capacitor , C1	Xiamen Faratronic Co., Ltd.	MKP62	X2, 0.47uF, 250Vac	FOWX2	UL,cUL
5a. X capacitor , C1 (Alternation)	Europtronic (Taiwan) Ind. Corp.	MPX or MPX2	X2, 0.47uF, 250Vac	FOWX2	UL,cUL
6. Y capacitor , C16	Success Electronic Co., Ltd	SE	250Vac, type Y1, 2200pF, minimum 125 degreeC	FOWX2	UL,cUL
6a. Y capacitor , C16 (Alternation)	Jya-nay Co Ltd.	JN	250Vac, type Y1, 2200pF, minimum 125 degreeC	FOWX2	UL,cUL
7. NTC, NTC1,NTC2	THINKING ELECTRONIC INDUSTRIAL CO LTD	SCK-055	240 Vac, I <sub>max</sub> = 6 Amp, I <sub>ss</sub> = 5 Amp.	XGPU2/8	UL,cUL

Object/part No.	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
8. Optical Isolators, IC2	Toshiba Corporation Semicon. Co. Discrete Div.	TLP781	Dielectric strength voltage 5000Vac, distance through insulation 0.4 mm minimum, external spacing 5 mm minimum	FPQU2/8	UL,cUL
8a. Optical Isolators, IC2(Alternation)	Sharp Corporation	PC123	Dielectric strength voltage 5000Vac, distance through insulation 0.4 mm minimum, external spacing 5 mm minimum	FPQU2	UL,cUL
8b. Optical Isolators, IC2 (Alternation)	Lite-On Technology Corporation	LTV-817	Dielectric strength voltage 5000Vac, distance through insulation 0.4 mm minimum, external spacing 5 mm minimum	FPQU2	UL,cUL
9a. E-cap (Secondary) (C18, C19, C20, C21, C22, C27, C28, C38)	Various	Various	105 DegreeC. See Enclosure 7-01 for voltage ratings.		
10. Transistor (T1)	Various	Various	600V, 47A	-	-
11. PCB	Various	Various	V-0, 130 DegreeC	ZPMV2	UL
12. Transformer (PT1)	MAIN POWER ELECTRIC CO LTD	170-00306-A09	CLASS B	-	
12-01. Insulation system (PT1)	MAIN POWER ELECTRIC CO LTD	SAF003	CLASS B	OBJY2	UL
12-02. Triple Insulation Wire (PT1)	FURUKAWA ELECTRIC CO LTD	TEX-E	Min 130 Deg.C	OBJT2	UL E206440
12-03. Bobbin (PT1)	Chang Chun Plastics Co., Ltd.	T375J	Phenolic, V-0, 150 Degree C, min. 0.75mm thickness.	QMFZ2, QMFZ8	UL E59481
12-04. Core (PT1)	Various	Various	Ferrite	--	--
12-05. Winding (PT1)	Various	MW75	Min.130 Deg.C, Polyurethane (Polyamide)	OBMW2	UL
12-06. Tape(PT1)	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ	0.05 mm thick, 130 DegreeC	OANZ2	UL E165111
12-07. Tubing	Various	Various	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; minimum 130 °C, minimum 300 V	UZFT2, YDPU2, YDRY2, YDTU2	UL
12-08. Varnish (PT1)	ELANTAS ELECTRICAL INSULATION	50 (+3)	130 DegreeC	OBOR2	UL E87039

Object/part No.	Manufacturer/ trademark	type/model	technical data	CCN	Marks of Conformity
	ELANTAS PDG INC				
13. Inductor, L1	FUYUAN	L1	-	-	-
14. Inductor, L2	FUYUAN	L2	-	-	-
15. Inductor, L4	FUYUAN	L4	-	-	-
16. Bobbin of L1 , L2, L4	Chang Chun Plastics Co., Ltd.	T357	V-0, 150 DegreeC	QMFZ2	UL E59481
17. Winding wire of L1,L2	XIN LONG MAGNET WIRE CO. LTD	2UEW	Min.130 DegreeC, Polyurethane (Polyamide)	OBMW2	E171082
18. Winding wire of L4	FURUKAWA ELECTRIC CO LTD	TEX-E	Min 130 Deg.C	OBJT2	UL E206440
19.Label	Various	Various	95 degreeC minimum on thermoplastic	PGDQ2 or PGJI2	UR
20.Glue	Various	Various	V-2 minimum	QMFZ2	UR
21. Primary Heatsink	Various	Various	Aluminum. Overall 143 mm by 65 mm by 37 mm. See Enclosure 4-02 for dimensions and location of attached minimum 2 layers of insulation tape,	-	-
22. Secondary Heatsink	Various	Various	Aluminum. Overall 167.5 mm by 35 mm by 30 mm. See Enclosure 4-02 for dimensions and locations of attached minimum 2 layers of insulation tape,	--	--
23. Insulation tape on heatsinks.	Various	Various	Polyester. Minimum 2 layers. minimum 0.05 mm thick each layer.	OANZ, OANZ2	UL



## Enclosures

<u>Type</u>	<u>Supplement Id</u>	<u>Description</u>
Photographs	3-01	Overall view - Top
Photographs	3-02	Overall view - Bottom
Photographs	3-03	Internal View
Photographs	3-04	PWB - Top Heatsink Removed
Photographs	3-05	PWB - Solder Side
Photographs	3-06	Top Heatsink
Photographs	3-07	Transformer PT1
Photographs	3-08	Transformer PT1 inside
Diagrams	4-01	Transformer Specification
Diagrams	4-02	Heatsink Drawings
Diagrams	4-03	Link choke L1 spec
Diagrams	4-04	Line Choke L2 spec
Diagrams	4-05	Output Cable Strain Relief
Diagrams	4-06	Output Connector Drawing
Diagrams	4-07	Secondary Choke L4
Schematics + PWB	5-01	PWB layout
Manuals		
Miscellaneous	7-01	Model Differences