

## 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>	Listing
<b>CCN:</b>	QQGQ, QQGQ7 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
<b>Product:</b>	ITE Power Supply
<b>Model:</b>	GT*96180-*11-2.0-T** The 1st "*" part can be 'M' or '-' or 'H' for market identification and not related to safety. The 2nd "*" denotes the rated output wattage designation, which can be "01" to "18", with interval of 1. The 3rd "*" = 3 means desktop class I with C14 AC inlet = 3A means desktop class I with C6 AC inlet The last * denote any six character = 0-9 or A-Z or ()[] or - or blank for marketing purposes.  There are three different configurations for this model: Configuration A, B & C (see test report for detail)
<b>Rating:</b>	Input: 100-240Vac, 50-60Hz, 0.6A  Output: 9Vdc, Max.2A, Max.18W (Full rating)  (For derating information please refer to enclosure id 7-01 for detail)
<b>Applicant Name and Address:</b>	GLOBTEK (HONG KONG) LTD UNIT 1402, BENSON TOWER 74 HUNG TO RD 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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Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

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Reviewed by: Brian Wong / Project 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 covered in this report is a AC to DC switching power supply unit intended for use with information technology equipment in TN power system and for indoor use only. It consists of a switching transformer, electronic components mounted on PWB and housed within plastic enclosure and sealed by ultrasonic welding. The unit employs an AC inlet for the connection to mains power and output with DC cord type.

There are three different configurations for this model, (refer to enclosure for details),  
Config A: Without R22, R23, R24; earthing wire connected between AC inlet PE pin to output -ve; (see enclosure photographs 3-06, 3-07, 5-02 for detail);  
Config B: Without R22, R23; With R24; earthing wire connected between AC inlet PE pin to R24; (see enclosure id 3-09, 3-10 for detail);  
Config C: With R22, R23, without R24; earthing wire connected between AC inlet PE pin to output -ve; (see enclosure photographs 3-11, 3-12, 3-13, 5-02 for detail);

**Model Differences**

Series model GT\*96180-\*11-2.0-T\*\* with three different configurations (A, B and C);

These three configurations are identical except for the bridging component variations and the earthing wire connection (see below);

Config A: Without R22, R23, R24; earthing wire connected between AC inlet PE pin to output -ve; (see enclosure photographs 3-06, 3-07, 5-02 for detail);  
Config B: Without R22, R23; With R24; earthing wire connected between AC inlet PE pin to R24; (see enclosure id 3-09, 3-10 for detail);  
Config C: With R22, R23, without R24; earthing wire connected between AC inlet PE pin to output -ve; (see enclosure photographs 3-11, 3-12, 3-13, 5-02 for detail);

**Technical Considerations**

- Equipment mobility : transportable, movable
- 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) : 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
- Altitude of test laboratory (m) : <2000
- Mass of equipment (kg) : 0.1718kg
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 40°C at full load; 50°C at 80% load; 60°C at 60% load; 70°C at 40% load;
- 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: 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 accessible locations (with circuit/schematic designation) are within a limited current circuit: CY2 secondary pin (for config A and B);, CY2 secondary pin and R23 secondary pin (for config C only);
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): 9Vdc output
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual
- LEDs provided in the product are considered low power devices: Yes

#### Additional Information

Unless specified, the information and evaluation mentioned in this report applies to all configurations (A, B and C);

The equipment covered in this report has a de-rating characteristics)  
(For derating information please refer to enclosure id 7-01 for detail)

#### 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
Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.
2.5 LPS Mark	"LPS" Marking
2.7.6 - Special fuse consideration	"This power supply is not designed to be repaired. No serviceable parts inside." stated on manual.
<b>Special Instructions to UL Representative</b>	
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 model covered in this report	T1	N/A	Primary winding to secondary winding	300 0	4243	1s

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

N/A

**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:**

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

Model	Component	Material	Test	Sample(s)	Test Specifics
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
Enclosure	SABIC INNOVATIVE PLASTICS B V	SE100	PPE+PS, V-1, 95degC, min thickness: 2.0mm (see enclosure id 7-02 for detail)	QMFZ2/8	UL E45329	
PCB	Interchangeable	Interchangeable	V-1, 130degC, min thickness: 1.6mm (see enclosure id 5-02 for detail)	ZPMV2/8	UL	
Appliance Inlet (C6 type) (for T3A series)	ZHEJIANG LECI ELECTRONICS CO LTD	DB-6	Rated 5A, 250Vac, 105°C.	AXUT2/8	UL (E302229)	
-Alternate	TECX-UNIONS TECHNOLOGY CORP	TU-333 series	Rated 2.5A, 250Vac, 75°C.	AXUT2/8	UL (E220004)	
-Alternate	SUN FAIR ELECTRIC WIRE & CABLE (HK) CO LTD	S-02	Rated 2.5A, 250Vac	AXUT2/8	UL (E226643)	
-Alternate	RICH BAY CO LTD	R-30790	Rated 2.5A, 250Vac, 105°C	AXUT2/8	UL (E184638)	
-Alternate	RONG FENG INDUSTRIAL CO LTD	RF-190	Rated 2.5A, 250Vac, 105°C.	AXUT2/8	UL (E102641)	
-Alternate	SHENZHEN DELIKANG ELECTRONICS TECHNOLOGY CO LTD	CDJ-2	Rated 2.5A, 250Vac, 105°C.	AXUT2/8	UL (E217394)	
Appliance inlet (C14 type) (For T3 series)	Zhejiang LECI Electronics Co., Ltd.	DB-14	10A, 250Vac, 105 degC	AXUT2/8	UL E302229	
-Alternate	Rich Bay Co., Ltd.	R-301SN	10A, 250Vac, 105 degC	AXUT2/8	UL E184638	
-Alternate	Sun Fair Electric Wire & Cable (HK)Co. Ltd.	S-03	10A, 250Vac	AXUT2/8	UL E226643	
-Alternate	TECX-UNIONS Technology	TU-301-S, TU-301-SP	10A, 250Vac, 105 degC	AXUT2/8	UL E220004	

	Corporation					
-Alternate	Rong Feng Industrial Co., Ltd.	SS-120	10A, 250Vac, 105degC	AXUT2/8	UL E102641	
-Alternate	Inalways Corporation	0711	10A, 250Vac, 90degC	AXUT2/8	UL E94191	
-Alternate	Zhe Jiang Bei Er jia	ST-A01-003J	10A, 250Vac, 95degC	AXUT2/8	UL E225980	
Bulk Capacitor (C1)	--	--	Rated 33uF Min 400V, Min 105degC	--	--	
Line filter(LF1)	Interchangeable	Interchangeable	130 degC (see enclosure id 4-02 for detail)	--	--	
-Bobbin for LF1	CHANG CHUN PLASTICS CO LTD	T375J/T375HF	V-0, 150degC, min 0.43mm thick	QMFZ2	UL E59481	
-Copper wire for LF1	Interchangeable	Interchangeable	Min. 130degC	OBMW2	UL	
-Insulation tape for LF1	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT-280	Min. 130degC	OANZ2	UL E165111	
Transformer (T1)	GlobTek/WUXI HAOPUWEI ELECTRONICS CO LTD	TF043	EE22x18,8x5,7mm; Class B (see enclosure id 4-01 for detail)	--	--	
- Insulation system used in T1	GLOBTEK INC	GTX-130-TM	Class 130 (B) Insulation System.	OBJY2	UL (E243347)	
- Insulation system used in T1 (Alternate)	WUXI HAOPUWEI ELECTRONICS CO LTD	ZT-130	Class 130 (B) Insulation System	OBJY2	UL (E315275)	
Primary winding used in T1	Interchangeable	MW 28 MW75 MW79 MW80	Polyurethane with or without overcoat Polyamide, 130 Deg C min.	OBMW2	UL	
-Secondary winding used in T1	GREAT LEOFLON INDUSTRIAL CO LTD	TRW(B)	Rated 130 Deg C Triple insulated wire	OBJT2	UL (E211989)	
-Bobbin for T1	Changchun Plastics	T375J	Phenolic, 150 Deg C, V-0. For the type T373J with color BK and BN, the min thickness is 2.0mm.	QMFZ2/8	UL (E59481)	
-Bobbin for T1	Sumitomo Bakelite	PM-9820	Phenolic, 150DegC, V-0, min	QMFZ2	UL E41429	

(Alternate)	CO.,LTD		thickness is 2.0mm			
Core used in T1	--	--	Ferrite core ,approximate overall 22mm by 18.6mm by 5.75mm	--	--	
- Insulation Tape used in T1	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	PZ, CT	Rated 130 Deg C	OANZ2	UL (E165111)	
- Insulation Tape used in T1 (Alternate)	JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD	JY25-A	Rated 130 Deg C	OANZ2	UL (E246950)	
- Varnish used in T1	WU JIANG TAIHU INSULATING MATERIAL CO LTD	T-4260(a)	Rated 130 Deg C	OBOR2	UL (E228349)	
- Tube used in T1	GREAT HOLDING INDUSTRIAL CO LTD	TFL, TFT	VW-1. Rated 150V, 200 Deg C for TFL; Rated 300V, 200 Deg C for TFT	YDPU2	UL (E156256)	
- Tube used in T1 (Alternate)	SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD	WF	VW-1. Rated 600V, 200 Deg C	YPDU2	UL (E203950)	
X capacitor CX1 (optional)	Interchangeable	Interchangeable	X1 or X2, min. 275Vac, Max. 0.47uF, min. 100degC	FOWX2/8	UL	
Y capacitor (CY1, CY2, optional)	Interchangeable	Interchangeable	Y1, min. 250Vac, max. 2200pF, min. 85degC	FOWX2/8	UL	
Bridging Resistor (R22, R23) (Optional)	YAGEO COMPONENTS (SUZHOU) CO LTD	HHV series	250V, 10Mohm, 1W	FPAV2	UL (E333286)	
Varistor (MOV1) (optional)	THINKING ELECTRONIC INDUSTRIAL CO LTD	TVR10471, TVR14471	Rated 300Vac. 85 degree C. Body coated with minimum V-1 material.	VZCA2/8	UL/cUL (E314979)	
Varistor (MOV1) (optional) (Alternate)	JOYIN CO LTD	10N471K, 14N471K	Rated 300Vac. 85 degree C. Body coated with	VZCA2/8	UL/cUL (E325508)	

			minimum V-1 material.			
Varistor (MOV1) (optional) (Alternate)	CENTRA SCIENCE CORP	CNR10D471K CNR14D471K	Rated 300Vac. 85 degree C. Body coated with minimum V-1 material.	VZCA2/8	UL/cUL (E316325)	
Varistor (MOV1) (optional) (Alternate)	SUCCESS ELECTRONICS CO LTD	SVR10D471K SVR14D471K	Rated 300Vac. 105 degree C. Body coated with minimum V-1 material.	VZCA2/8	UL/cUL (E330256)	
Varistor (MOV1) (optional) (Alternate)	BRIGHTKING (SHENZHEN) CO LTD	471KD10, 471KD14	Rated 300Vac. 105 degree C. Body coated with minimum V-1 material.	VZCA2/8	UL/cUL (E327997)	
Varistor (MOV1) (optional) (Alternate)	WALSIN TECHNOLOGY CORP	VZ10D471K	Rated 300Vac. 105 degree C. Body coated with minimum V-1 material.	VZCA2/8	UL/cUL (E309297)	
Varistor (MOV1) (optional) (Alternate)	LIEN SHUN ELECTRONICS CO LTD	10D471K, 14D471K	Rated 300Vac. 105 degree C. Body coated with minimum V-1 material.	VZCA2/8	UL/cUL (E315524)	
Varistor (MOV1) (optional) (Alternate)	CERAMATE TECHNICAL CO LTD	GNR10D471K GND14D471K	Rated 300Vac. 105 degree C. Body coated with minimum V-1 material.	VZCA2/8	UL/cUL (E315429)	
Fuse (F1, F2) (F2 is optional)	Conquer Electronics Co., Ltd.	MST series	T1.6AL 250VAC	JDYX2/8	UL E82636	
Fuse (F1, F2) (F2 is optional) (Alternate)	Interchangeable	Interchangeable	T1.6AL 250VAC	JDYX/7	UL	
Opto-coupler (U3)	Everlight Electronics	EL817	Rated min.	FPQU2/8	UL/cUL	



	Co., Ltd.		110deg C Provide min 5000Vac isolation test voltage rating.		(E214129)	
-Alternate	COSMO Electronics Corporation	K1010 / KP1010	Rated min. 115deg C Provide min 5000Vac isolation test voltage rating.	FPQU2/8	UL/cUL (E169586)	
-Alternate	Lite-On Technology Corporation	LTV-817	Rated min. 115deg C Provide min 5300Vac isolation test voltage rating for LTV-817.	FPQU2/8	UL/cUL (E113898)	
-Alternate	Fairchild Semiconductor Corp	H11A817B / FOD817B	Rated min. 110deg C Provide min 5000Vac isolation test voltage rating.	FPQU2/8	UL/cUL (E90700)	
-Alternate	Sharp Corporation Electronic Components and Devices Group	PC817	Rated min. 100deg C Provide min 5000Vac isolation test voltage rating.	FPQU2	UL (E64380)	
-Alternate	Bright Led Electronics Corp.	BPC-817 / BPC- 817 M / BPC-817 S series	Rated min. 100deg C Provide min 5000Vac isolation test voltage rating.	FPQU2/8	UL (E236324)	
Heat Sink - HS2	--	--	Aluminum. Approximate overall	--	--	

			dimension 18*26*12mm, 1.5mm thick, secured to PWB by soldering (see enclosure id 7-06 for detail)			
Heat Sink – HS1	--	--	Aluminum. Approximate overall dimension 22.4mm by 19mm, 1.5mm thick, secured to PWB by soldering (see enclosure id 7-05 for detail)	--	--	
Insulation tape provided on HS2	CHANG SHU LIANG YI TAPE INDUSTRY CO LTD	LY-XX	Rated 130 Deg C – Insulating tape wrapped around the top of HS2 should be double pack edged (wrapped over the edge), the tape should also cover up the entire top of HS2	OANZ2	UL (E246820)	
Insulation tape provided on HS2 (Alternate)	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	1350T-1, 44	Rated 130 Deg C – Insulating tape wrapped around the top of HS2 should be double pack edged (wrapped over the edge), the tape should also cover up the entire top of HS2	OANZ2	UL (E17385)	
Insulation tape provided on HS2 (Alternate)	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT	Rated 130 Deg C – Insulating tape wrapped around the top of HS2 should be double pack edged (wrapped over the edge), the tape should also cover up the entire top of HS2	OANZ2	UL (E165111)	
Insulation tape provided on HS2 (Alternate)	SYMBIO INC	35660Y	Rated 130 Deg C – Insulating tape wrapped around the top of HS2 should be double pack edged (wrapped over the edge), the tape should also cover up the entire top of HS2 edge)	OANZ2	UL (E50292)	

Output cord	Interchangeable	Interchangeable	Min. 24AWG, min. VW-1, Min. 80degC, min. 60V.	AVLV2/8	UL	
Label (optional)	Interchangeable	Interchangeable	Rated min 80deg C. Suitable for use on the plastic enclosure	PGDQ2/PGJI2	UL	
BD1	Interchangeable	Interchangeable	Min. 1.5A/ min. 800V	--	--	
Q1	Interchangeable	Interchangeable	Min. 7A, Min 600V	--	--	
Strain Relief	Interchangeable	Interchangeable	Min. V-1 (see enclosure id 7-03 for detail)	QMFZ2	UL	
Glue (for fixing or thermal)	Interchangeable	Interchangeable	Min. V-2	QMFZ2	UL	
Earth wire	Interchangeable	Interchangeable	Min. 20 AWG, Min. 300V, Min. 80degC	AVLV2/8	UL	
Tube on earthing wire	Interchangeable	Interchangeable	Rated minimum 105degC, minimum 300V, VW-1 or FT-1	YPDU2/8	UL	
Insulation sheet between AC inlet and LF1	Interchangeable	Interchangeable	Min. V-2	QMFZ2	UL	

## **Enclosures**

<u>Type</u>	<u>Supplement Id</u>	<u>Description</u>
Photographs	3-01	Overview of model GTM96180-1811-2.0-T3 (Configuration A, B and C)
Photographs	3-03	Input side view of model GTM96180-1811-2.0-T3 (Configuration A, B and C)
Photographs	3-04	Output side view of model GTM96180-1811-2.0-T3 (Configuration A, B and C)
Photographs	3-06	Top view of PCB for model GTM96180-1811-2.0-T3 (Configuration A)
Photographs	3-07	Bottom view of PCB for model GTM96180-1811-2.0-T3 (Configuration A)
Photographs	3-09	Top view of PCB for model GTM96180-1811-2.0-T3 (Configuration B)
Photographs	3-10	Bottom view of PCB for model GTM96180-1811-2.0-T3 (Configuration B)
Photographs	3-11	Internal view of model GTM96180-1811-2.0-T3 (Configuration C)
Photographs	3-12	Top view of PCB for model GTM96180-1811-2.0-T3 (Configuration C)
Photographs	3-13	Bottom view of PCB for model GTM96180-1811-2.0-T3 (Configuration C)
Diagrams	4-01	Transformer T1 spec
Diagrams	4-02	LF1 spec
Schematics + PWB	5-01	Circuit schematic
Schematics + PWB	5-02	PWB layout
Miscellaneous	7-01	Instruction manual / derating characteristics
Miscellaneous	7-02	Enclosure dimension drawing
Miscellaneous	7-03	Strain relief and output connector spec
Miscellaneous	7-04	Label artwork
Miscellaneous	7-05	Dimension drawing of Heatsink HS1 mounted with Q1
Miscellaneous	7-06	Dimension drawing of Heatsink HS2 mounted with D2