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:	ITE POWER SUPPLY
Model:	GT-46400-WWVV-X.X-TZ WW is the standard output wattage, with a maximum value of "40", VV is the standard rated output voltage designation, with a value of "12" "15" "19"and "24"; -X.X denote the output voltage differentiator, subtracting X.X volts from standard output voltage VV in 0.1V increments, the actual output voltage rang is 12-24V, blank is to indicate the no voltage different. Z can be 3 or 3A, 3 means C14 inlet type, 3A means C6 inlet type
Rating:	I/P: 100-240Vac, 50-60Hz, 1.0A (For all models) O/P: See Miscellaneous 7-01 for Models/Ratings Differences List
Applicant Name and Address:	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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Prepared by: Vivian Chen Reviewed by: Wei Chen

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 for Class I, intended for use with Information Technology Equipment (ITE), there electronic components mounted on PWB, and housed in a thermoplastic enclosure by ultrasonic welding.

Model Differences

All models are identical except for output rating, type of appliance Inlet (B stand for C14 Inlet type, N stand for C6 Inlet type) and transformer with secondary wire.
See enclosure ID 7-01 for details.

Technical Considerations

- Equipment mobility : 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) : up to 2000 meters
- Altitude of test laboratory (m) : less than 2000 meters
- Mass of equipment (kg) : approx. 0.208 kg
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer’s specification of: 40°C
- The means of connection to the mains supply is: Pluggable A, Detachable power cord

- The product is intended for use on the following power systems: TN
- The equipment disconnect device is considered to be: Appliance inlet
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: CY1 secondary pin
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): all outputs
- 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

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.
LPS Marking (Optional)	Marked "LPS" or "Limited Power Source".

Special Instructions to UL Representative

Inspect the transformer(s) listed in Production-Line Testing Requirements 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 Production-Line Testing Requirements 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
All models	Transformer T1	N/A	Primary to secondary	3000	4242	1

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

No exemptions

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

No exemptions

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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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
01. Enclosure	SABIC INNOVATIVE PLASTICS	SE1X(GG)(f1)	Two pieces construction, secured together by ultrasonic welding, rated V-1 or better, 105degree C min. Minimum 2.0 mm thickness. See Enclosure/Diagram ID ____ for dimensions	QMFZ2	UL	
02. Appliance Inlet (for T3 model)	TECX-UNIONS TECHNOLOGY CORP	TU-301-SP	Rated 250 V, 15 A, 105 degree C min. (C14 type)	AXUT2	UL	
02a. Appliance Inlet (alternate) (for T3 model)	SUN FAIR ELECTRIC WIRE & CABLE (HK) CO LTD	S-03	Rated 250 V, 10 A, 75 degree C min. (C14 type)	AXUT2	UL	
02b. Appliance Inlet (for T3 model)	ZHEJIANG LECI ELECTRONICS CO LTD	DB-14	Rated 250 V, 15 A, 75 degree C min. (C14 type)	AXUT2	UL	
02c. Appliance Inlet (alternate) (for T3 model)	ZHE JIANG BEI ER JIA ELECTRONIC CO LTD	ST-A01-003J	Rated 250 V, 10 A, 75 degree C min. (C14 type)	AXUT2	UL	
02-1. Appliance Inlet (for T3A model)	TECX-UNIONS TECHNOLOGY CORP	TU-333	Rated 250 V, 2.5 A, 105 degree C min. (C6 type)	AXUT2	UL	
02-1a. Appliance Inlet (alternate) (for T3A model)	SUN FAIR ELECTRIC WIRE & CABLE (HK) CO LTD	S-02	Rated 250 V, 2.5 A, 75 degree C min. (C6 type)	AXUT2	UL	
02-1b. Appliance Inlet (alternate) (for T3A model)	ZHEJIANG LECI ELECTRONICS CO LTD	DB-6	Rated 250 V, 2.5 A, 75 degree C min. (C6 type)	AXUT2	UL	
02-1c. Appliance Inlet (alternate) (for T3A model)	ZHE JIANG BEI ER JIA ELECTRONIC CO LTD	ST-A04-002	Rated 250 V, 2.5 A, 75 degree C min. (C6 type)	AXUT2	UL	
03. Fuse (F1)	Various	Various	Listed, T2A, 250Vac	JDYX	UL	
03a. Fuse (F1)	CONQUER	MST	Rated T2A, 250Vac.	JDYX2	UL	

(Alternate)	ELECTRONICS CO LTD					
03b. Fuse (F1) (Alternate)	EVER ISLAND ELECTRIC CO LTD & WALTER ELECTRIC	2010	Rated T2A, 250Vac.	JDYX2	UL	
03c. Fuse (F1) (Alternate)	HOLLYLAND CO LTD	5ET	Rated T2A, 250Vac.	JDYX2	UL	
03d. Fuse (F1) (Alternate)	BEL FUSE INC	RST	Rated T2A, 250Vac.	JDYX2	UL	
03e. Fuse (F1) (Alternate)	COOPER BUSSMANN LLC	SS-5	Rated T2A, 250Vac.	JDYX2	UL	
03f. Fuse (F1) (Alternate)	LITTELFUSE WICKMANN WERKE	392	Rated T2A, 250Vac.	JDYX2	UL	
03g. Fuse (F1) (Alternate)	DONGGUAN BETTER ELECTRONIC TECHNOLOGY CO LTD	932	Rated T2A, 250Vac.	JDYX2	UL	
04. X-Capacitor (CX1) (optional)	Cheng Tung Industrial Co Ltd	CTX	Rated max 0.33 uF, min 250 V, X1 or X2 type, 100 degree C. (Compliance with IEC 60384-14)	FOWX2	UL	
04a. X-Capacitor (CX1) (optional) (Alternate)	Tenta Electric Industrial Co Ltd	MEX	Rated max 0.33uF, min 250 V, X1 or X2 type, 100 degree C. (Compliance with IEC 60384-14)	FOWX2	UL	
04b. X-Capacitor (CX1) (optional) (Alternate)	Ultra Tech Xiphi Enterprise Co Ltd	HQX	Rated max 0.33 uF, min 250 V, X1 or X2 type, 100 degree C. (Compliance with IEC 60384-14)	FOWX2	UL	
04c. X-Capacitor (CX1) (optional) (Alternate)	CARLI ELECTRONICS CO LTD	MPX	Rated max 0.33uF, min 250 V, X1 or X2 type, 100 degree C. (Compliance with IEC 60384-14)	FOWX2	UL	
04d. X-Capacitor (CX1) (optional) (Alternate)	JOEY ELECTRONICS	MPX	Rated max 0.33uF, min 250 V, X1 or X2 type, 105 degree C.	FOWX2	UL	

	(DONG GUAN) CO LTD		(Compliance with IEC 60384-14)			
04e. X-Capacitor (CX1) (optional) (Alternate)	XIANGTAI ELECTRONIC (SHENZHEN) CO LTD	MKP/MPX	Rated max 0.33uF, min 250 V, X1 or X2 type, 110 degree C. (Compliance with IEC 60384-14)	FOWX2	UL	
05. Bleeder Resistors (R1, R2)	--	--	Max. 2M ohms, min. 1/4W	--	--	
06. Bridge Diode (BD1)	--	--	Rated 2A, minimum 600 V.	--	--	
07. Storage Capacitor (C1) (for GT-46400-3612-TZ, GT-46400-4015-TZ, GT-46400-4019-TZ, GT-46400-4024-TZ)	--	--	Rated 400 V, max. 82uF, min. 105 degree C, provided with integral pressure relief	--	--	
07a. Storage Capacitor (C1) (for GT-46400-3012-TZ, GT-46400-3015-TZ, GT-46400-3019-TZ, GT-46400-3024-TZ)	--	--	Rated 400 V, max. 68uF, min. 105 degree C, provided with integral pressure relief	--	--	
08. Transistor (Q1)	Various	Various	Rated 6-15 A, minimum 600 V.	--	--	
09. Bridge Capacitors (CY1) (optional)	Success Electronics Co Ltd	SE, SB	Rated max. 2200pF, min. 250 Vac, 125 degree C, Y1 type. (Compliance with IEC 60384-14)	FOWX2	UL	
09a. Bridge Capacitors (CY1) (optional) (Alternate)	TDK-EPC CORPORATION	CD	Rated max. 2200pF, min. 250 Vac, 125 degree C, Y1 type. (Compliance with IEC 60384-14)	FOWX2	UL	
09b. Bridge Capacitors (CY1) (optional) (Alternate)	Walsin Technology Corp	AH	Rated max. 2200pF, min. 250 Vac, 125 degree C, Y1 type. (Compliance with IEC 60384-14)	FOWX2	UL	
09c. Bridge Capacitors (CY1) (optional) (Alternate)	Haohua Electronic Co	CT 7	Rated max. 2200pF, min. 250 Vac, 125 degree C, Y1 type. (Compliance with IEC 60384-	FOWX2	UL	

			14)			
09d. Bridge Capacitors (CY1) (optional) (Alternate)	XIANGTAI ELECTRONIC (SHENZHEN) CO LTD	YOB, YOF, YOE	Rated max. 2200pF, min. 250 Vac, 125 degree C, Y1 type. (Compliance with IEC 60384-14)	FOWX2	UL	
09e. Bridge Capacitors (CY1) (optional) (Alternate)	JUHONG ELE CO	JB	Rated max. 2200pF, min. 250 Vac, 125 degree C, Y1 type. (Compliance with IEC 60384-14)	FOWX2	UL	
10. Optical Isolator (PC1)	Lite-On Technology Corp	LTV-817	Isolation: 5000 Vac, minimum 100 degree C.	FPQU2	UL	
10a. Optical Isolators (PC1) (Alternate)	Everlight Electronics Co Ltd	EL817	Isolation: 5000 Vac, minimum 110 degree C.	FPQU2	UL	
10b. Optical Isolators (PC1) (Alternate)	COSMO ELECTRONICS CORP	K1010	Isolation voltage minimum 5000 Vac, minimum 115 degree C.	FPQU2	UL	
10c. Optical Isolators (PC1) (Alternate)	BRIGHT LED ELECTRONICS CORP	BPC-817XXXXXX, BPC-817MXXXXXX, BPC-817SXXXXXX, where XXXXXX can be any alphanumeric character or blank.	Isolation voltage minimum 5000 Vac, minimum 100 degree C.	FPQU2	UL	
10d. Optical Isolators (PC1) (Alternate)	RENESAS ELECTRONICS CORPORATION	PS2561-1	Isolation voltage minimum 5000 Vac, minimum 100 degree C.	FPQU2	UL	
11. Line filter (NF1) (Optional)	Various	NF00025	Open type construction. Rated 105 dehree C.	--	--	
11a Core	Various	Various	Ferrite, toroidal, measured overall approx. 8mm OD by 4 mm ID by 4 mm wide.	--	--	
11b Coil	Various	Various	Rated minimum 105 degree C.	OBMW2	UL	
12. Line filter (NF2)	Various	NF00124	Open type construction. Rated	--	--	

(Optional)			105 dehree C.			
12a Core	Various	Various	Ferrite, toroidal, measured overall approx. 16mm OD by 12 mm ID by 8 mm wide.	--	--	
12b Coil	Various	Various	Rated minimum 105 degree C.	OBMW2	UL	
13. Varistor (MOV1) (optional)	CENTRA SCIENCE CORP	CNR 14V511K	Rated minimum 300 Vac, minimum 385 Vdc.	VZCA2	UL, C-UL	
13a. Varistor (MOV1) (optional) (Alternate)	CENTRA SCIENCE CORP	CNR 10V471K, CNR 14D471K	Rated minimum 300 Vac, minimum 385 Vdc.	VZCA2	UL, C-UL	
13b. Varistor (MOV1) (optional) (Alternate)	CENTRA SCIENCE CORP	CNR 14D511K	Rated minimum 300 Vac, minimum 385 Vdc.	VZCA2	UL, C-UL	
13c. Varistor (MOV1) (optional) (Alternate)	JOYIN CO LTD	10N511K, 10N471K	Rated minimum 300 Vac, minimum 385 Vdc.	VZCA2	UL, C-UL	
13d. Varistor (MOV1) (optional) (Alternate)	JOYIN CO LTD	14N471K, 14N511K, 14S511K	Rated minimum 300 Vac, minimum 385 Vdc.	VZCA2	UL, C-UL	
13e. Varistor (MOV1) (optional) (Alternate)	THINKING ELECTRONIC INDUSTRIAL CO LTD	TVR 10471K, TVR 10511K, TVR 10471-V	Rated minimum 300 Vac, minimum 385 Vdc.	VZCA2	UL, C-UL	
13f. Varistor (MOV1) (optional) (Alternate)	THINKING ELECTRONIC INDUSTRIAL CO LTD	TVR 14471K, TVR 14511K	Rated minimum 300 Vac, minimum 385 Vdc.	VZCA2	UL, C-UL	
13g. Varistor (MOV1) (optional) (Alternate)	CERAMATE TECHNICAL CO LTD	GNR 14D471K, GNR 14D511K	Rated minimum 300 Vac, minimum 385 Vdc.	VZCA2	UL, C-UL	
13h. Varistor (MOV1) (optional) (Alternate)	CERAMATE TECHNICAL CO LTD	GNR10D471K	Rated minimum 300 Vac, minimum 385 Vdc.			
13i. Varistor (MOV1) (optional) (Alternate)	SUCCESS ELECTRONICS CO LTD	SVR10D471K, SVR10D511K	Rated minimum 300 Vac, minimum 385 Vdc.	VZCA2	UL, C-UL	
13j. Varistor (MOV1) (optional) (Alternate)	SUCCESS ELECTRONICS CO LTD	SVR14D471K, SVR14D511K	Rated minimum 300 Vac, minimum 385 Vdc.	VZCA2	UL, C-UL	
14. Transformer (T1) (for 12V)	ENG Electric Co Ltd	XF00928	Class B, See Enclosure / Diagram ID ____ for construction details.	--	--	

14. Transformer (T1) (for 15V)		XF00942	Class B, See Enclosure / Diagram ID ____ for construction details.	--	--	
14. Transformer (T1) (for 19V)		XF00943	Class B, See Enclosure / Diagram ID ____ for construction details.	--	--	
14. Transformer (T1) (for 24V)		XF00944	Class B, See Enclosure / Diagram ID ____ for construction details.	--	--	
14-01. Insulation system for Transformer (T1)		130-1	Insulation system Class B (130 degree C, adapted form GREAT LEOFLON INDUSTRIAL CO LTD, Type GH-130)	OBJY2	UL	
14-02. Core	--	--	EE type, Ferrite, dimension 8mm OD,	--	--	
14-03. Coil	--	--	130 degree C	OBMW2	UL	
14-04. Bobbin	Chang Chun Plastics Co., Ltd.	T375J	V-0, 150degree C, Phenolic, thickness 0.8mm minimum	QMFZ2	UL	
14-04a. Bobbin (Alternate)	SUMITOMO BAKELITE CO LTD	PM-9820	V-0, 150degree C, Phenolic, thickness 0.71mm minimum	QMFZ2	UL	
14-05. Tubing/Sleeving	Great Holding Industrial Co. Ltd.	TFL, TFS, TFT	Rated 200 degree C, VW-1, 600V max.	YDPU2	UL	
14-06. Triple Insulated Wire	Great Leoflon Industrial Co. Ltd.	TRW(B)	130 degree C	OBJT2	UL	
14-07. Varnish (Alternate)	Elantas Electrical Insulation Elantas Pdg Inc	V1630FS	Rated minimum 130 degree C.	OBOR2	UL	
14-07a. Varnish (Alternate)	JOHN C DOLPH CO	BC-346A	Rated minimum 130 degree C.	OBOR2	UL	
14-08. Insulation Tape	3M Company	1350F-1, 1350T-1	130 degree C.	OANZ2	UL	
14-08a. Insulation Tape (Alternate)	BONDTEC PACIFIC CO LTD	370S	130 degree C.	OANZ2	UL	
15. Internal Glue Materials	--	--	Rated V-2 minimum.	QMFZ2	UL	
16. Internal Plastic Part Materials	--	--	Rated minimum V-2.	QMFZ2	UL	

17. Strain Relief Of Output Cord	Various	Various	Minimum 300 V, 80 degree C, maximum 3.05 m, marked VW-1 or FT-1. Suitable for external use. Refer to Enclosure/Diagram ___ for strain relief dimension details.	QMFZ2	UL	
18. PWB	Various	Various	V-0 or better, minimum 130 degree C.	ZPMV2	--	
19. Label	Various	Various	Minimum 70 degree C. if maximum surface temperature not specified.	PGDQ2, PGJI2	UL	
20. Heat Sink (HS1) (Consideration as Primary)	Various	Various	Aluminum, minimum 2.0 mm thick. See Enclosure for detailed dimensions.	--	--	
21. Heat Sink (HS2) (Consideration as secondary)	Various	Various	Aluminum, minimum 1.0 mm thick. See Enclosure for detailed dimensions.	--	--	
21-1. Tape	3M Company	1350F-1, 1350T-1	Wrapped around HS2. Min. 2 layers.	OANZ2	UL	
21-1a. Tape (Alternate)	BONDTEC PACIFIC CO LTD	370S	Wrapped around HS2. Min. 2 layers.	OANZ2	UL	
22. LPS resistor (R10) (for GT-46400-3612-TZ, GT-46400-4019-TZ, GT-46400-4024-TZ)	--	--	0.56 ohm, 2W.	--	--	
22. LPS resistor (R10) (for GT-46400-4015-TZ)	--	--	0.51 ohm, 2W.	--	--	
22. LPS resistor (R10) (for GT-46400-3012-TZ)	--	--	0.62 ohm, 2W.	--	--	
22. LPS resistor (R10) (for GT-46400-3015-TZ)	--	--	0.68ohm, 2W.	--	--	
22. LPS resistor (R10) (for GT-46400-3019-TZ, GT-46400-3024-TZ)	--	--	0.75 ohm, 2W.	--	--	
Bonding Conductor	Various	Various	Green or green/yellow wire,	AVLV, AVLV2	UL	

			minimum No. 18 AWG.			