Issue Date: 2016-04-07 Page 1 of 10 Report Reference # E341351-A81-UL

### **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-46200-WWVV-X.XX-T2\*\*\*\*\*\*, GT-41130-WWVV-X.XX-T2\*\*\*\*\*\*

WW is the standard output wattage, with a value of 20.

VV is the standard rated output voltage designation, with a value of

05, 06.

-X.XX is optional deviation, subtracted from standard output voltage,

which is -0.05 or blank.

Each \* = 0-9 or A-Z or ()[] - or blank for marketing purposes.

**Rating:** I/P: 100-240Vac, 50-60Hz, 0.5A (For all models)

O/P:

See Miscellaneous 7-01 for details.

**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.

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: Nat Liu/ Amos Chen Reviewed by: Kyle Lin

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### **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 -
  - 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 product is a ITE POWER SUPPLY for Information Technology Equipment (ITE). All live parts are enclosed in a thermoplastic enclosure, provided with appliance inlet for connection to the AC mains supply.

#### **Model Differences**

- All models are identical except for output rating and model designation.
- See Miscellaneous 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 II (double insulated)
- 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. 0.16 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

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- 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: Secondary side of bridging capacitor (CY1 and CY2)
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): output port
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual
- LEDs provided in the product are considered low power devices: Yes

## 

Model	
Power rating - Class II symbol	Symbol for Class II construction  (60417-2-IEC-5172)
Fuses - Non-operator access/soldered-in fuses	Unambiguous reference to service documentation for instructions for replacement of fuses replaceable only by service personnel

Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.
	Tuserioluer.

LPS Marking (Optional)

Marked with "LPS" or "Limited Power Source" on unit.

### Special Instructions to UL Representative

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-

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Line Testing Requirements be conducted at the component manufacturer.

<b>-</b>									
Production-Line Testing Requirements									
<b>Electric Stre</b>	ngth Test Special	<b>Constructions</b>	- Refer to Generic Inspe	ection Ins	structions, F	Part AC for			
further inform	<u>nation.</u>								
		Removable		V		Test Time,			
Model	Component	Parts	Test probe location	rms	V dc	s			
all models	transformer T1	N/A	Primary to secondary	300 0	4242	1			
Earthing Cor	ntinuity Test Exem	ptions - This to	est is not required for th	e followi	ng models:				
all models									
Electric Stre	ngth Test Exempti	ons - This test	is not required for the f	ollowing	models:				
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:									
<del></del>									
Sample and	Test Specifics for	Follow-Up Tes	ts at UL						
Model	Component	Material	Test	Sa	ample(s)	Test Specifics			
		-							

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1.5.1	TABLE: list of critica	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		Two pieces construction, secured together by ultrasonic welding, rated V-1 or better, 130 degree C min. Minimum 2.0 mm thickness. See Enclosure/Diagram ID 4-01 for dimensions	QMFZ2	UL	
02. Appliance Inlet	TECX-UNIONS TECHNOLOGY CORP	SO-222	Rated 250 V, 2.5 A, 105 degree C min.	AXUT2	UL	
02a. Appliance Inlet (alternate)	SUN FAIR ELECTRIC WIRE & CABLE (HK) CO LTD	S-01	Rated 250 V, 2.5 A, 75 degree C min.	AXUT2	UL	
02b. Appliance Inlet (alternate)	ZHEJIANG LECI ELECTRONICS CO LTD	DB-8	Rated 250 V, 2.5 A, 75 degree C min.	AXUT2	UL	
02c. Appliance Inlet (alternate)	ZHE JIANG BEI ER JIA ELECTRONIC CO LTD	ST-A03-005	Rated 250 V, 2.5 A, 75 degree C min.	AXUT2	UL	
03. Fuse (F1)	Various	Various	Listed, T2A, 250Vac	JDYX	UL	
03a. Fuse (F1) (Alternate)	Conquer Electronics Co Ltd	MST	Rated T2A, 250Vac.	JDYX2	UL	
03b. Fuse (F1) (Alternate)	Ever Island Electric Co Ltd & Walter Electric	2010	Rated T2A, 250Vac.	JDYX2	UL	
03c. Fuse (F1) (Alternate)	COOPER BUSSMANN LLC	SS-5	Rated T2A, 250Vac.	JDYX2	UL	
03d. Fuse (F1) (Alternate)	Bel Fuse Inc	RST	Rated T2A, 250Vac.	JDYX2	UL	
03e. Fuse (F1) (Alternate)	HOLLYLAND CO LTD	5ET	Rated T2A, 250Vac.	JDYX2	UL	
03f. Fuse (F1) (Alternate)	LITTELFUSE WICKMANN WERKE	392	Rated T2A, 250Vac.	JDYX2	UL	

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04. X-Capacitor (CX1)	Cheng Tung Industrial Co Ltd	СТХ	Rated max 0.22 uF, min 250 V, X1 or X2 type, 100 degree C. The damp heat test duration in 21 days minimum.	FOWX2	UL	
04a. X-Capacitor (CX1) (Alternate)	Tenta Electric Industrial Co Ltd	MEX	Rated max 0.22uF, min 250 V, X1 or X2 type, 100 degree C. The damp heat test duration in 21 days minimum.	FOWX2	UL	
04b. X-Capacitor (CX1) (Alternate)	Ultra Tech Xiphi Enterprise Co Ltd	HQX	Rated max 0.22 uF, min 250 V, X1 or X2 type, 100 degree C. The damp heat test duration in 21 days minimum.	FOWX2	UL	
04c. X-Capacitor (CX1) (Alternate)	CARLI ELECTRONICS CO LTD	MPX	Rated max 0.22uF, min 250 V, X1 or X2 type, 100 degree C. The damp heat test duration in 21 days minimum.	FOWX2	UL	
04d. X-Capacitor (CX1) (Alternate)	JOEY ELECTRONICS (DONG GUAN) CO LTD	MPX	Rated max 0.22uF, min 250 V, X1 or X2 type, 105 degree C. The damp heat test duration in 21 days minimum.	FOWX2	UL	
04e. X-Capacitor (CX1) (Alternate)	XIANGTAI ELECTRONIC (SHENZHEN) CO LTD	MKP/MPX	Rated max 0.22uF, min 250 V, X1 or X2 type, 110 degree C. The damp heat test duration in 21 days minimum.	FOWX2	UL	
05. Bleeder Resistors (R1, R2)			Max. 2Mohs, min. 500V			
06. Bridge Diode (DB1)			Rated 2A, minimum 600 V.			
07. Storage Capacitor (C1) (for models GT-46200-2005-T2)			Rated 400 V, max. 47uF, min. 105 degree C, provided with integral pressure relief			
07a. Storage Capacitor (C1) (for models GT- 46200-1806-0.05-T2)			Rated 400 V, max. 33uF, min. 105 degree C, provided with integral pressure relief			
08. Transistor (Q1)	Various	Various	Rated 4-10 A, minimum 600 V.			
09. Bridge Capacitors (CY1,CY2) (optional)	Success Electronics Co Ltd	SE, SB	CY1 rated max. 1000pF, CY2 rated max. 100pF, min. 250 Vac, 125 degree C, Y1 type.	FOWX2	UL	

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			(Compliance with IEC 60384-14)			
09a. Bridge Capacitors (CY1,CY2) (optional) (Alternate)	TDK-EPC CORPORATION	CD	CY1 rated max. 1000pF, CY2 rated max. 100pF, min. 250 Vac, 125 degree C, Y1 type. The damp heat test duration in 21 days minimum.	FOWX2	UL	
09b. Bridge Capacitors (CY1,CY2) (optional) (Alternate)	Walsin Technology Corp	AH	CY1 rated max. 1000pF, CY2 rated max. 100pF, min. 250 Vac, 125 degree C, Y1 type. The damp heat test duration in 21 days minimum.	FOWX2	UL	
09c. Bridge Capacitors (CY1,CY2) (optional) (Alternate)	Haohua Electronic Co	CT 7	CY1 rated max. 1000pF, CY2 rated max. 100pF, min. 250 Vac, 125 degree C, Y1 type. The damp heat test duration in 21 days minimum.	FOWX2	UL	
09e. Bridge Capacitors (CY1,CY2) (optional) (Alternate)	XIANGTAI ELECTRONIC (SHENZHEN) CO LTD	YOB YOF YOE	CY1 rated max. 1000pF, CY2 rated max. 100pF, min. 250 Vac, 125 degree C, Y1 type. The damp heat test duration in 21 days minimum.	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	Isolation voltage minimum 5000 Vac, minimum 100 degree C.	FPQU2	UL	

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		alphanumeric character or				
		blank.				
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	NF00103	Open type construction. Rated 105 dehree C.			
11a Core	Various	Various	Ferrite, overall measured overall 15.5 mm by10.3mm by 2.5mm			
11b Coil	Various	Various	Rated minimum 105 degree C.	OBMW2	UL	
12. Transformer (T1)		XF00916	Class B, See Enclosure / Diagram ID 4-03 for construction details.			
12-01. 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	
12-02. Core			EE type, Ferrite, dimension 22.5mm by 19mm by 5.7mm			
12-03. Coil			130 degree C	OBMW2	UL	
12-04. Bobbin	Chang Chun Plastics Co., Ltd.	T375J	V-0, 150degree C, Phenolic, thickness 0.8mm minimum	QMFZ2	UL	
12-04a. Bobbin (Alternate)	SUMITOMO BAKELITE CO LTD	PM-9820	V-0, 150degree C, Phenolic, thickness 0.71mm minimum	QMFZ2	UL	
12-05. Tubing/Sleeving	Great Holding Industrial Co. Ltd.	TFL, TFS, TFT	Rated 200 degree C, VW-1, 600V max.	YDPU2	UL	
12-06. Triple Insulated Wire	Great Leoflon Industrial Co. Ltd.	TRW(B)	130 degree C	OBJT2	UL	
12-07. Varnish	John C. Dolph Co.	BC-346A	Rated minimum 200 degree C.	OBOR2	UL	
12-07a. Varnish (Alternate)	Elantas Electrical Insulation Elantas Pdg Inc	V1630FS	Rated minimum 130 degree C.	OBOR2	UL	
12-08. Insulation Tape	3M Company	1350F-(#)	130 degree C.	OANZ2	UL	
12-08a. Insulation Tape	3M Company	1350T-1	130 degree C.	OANZ2	UL	

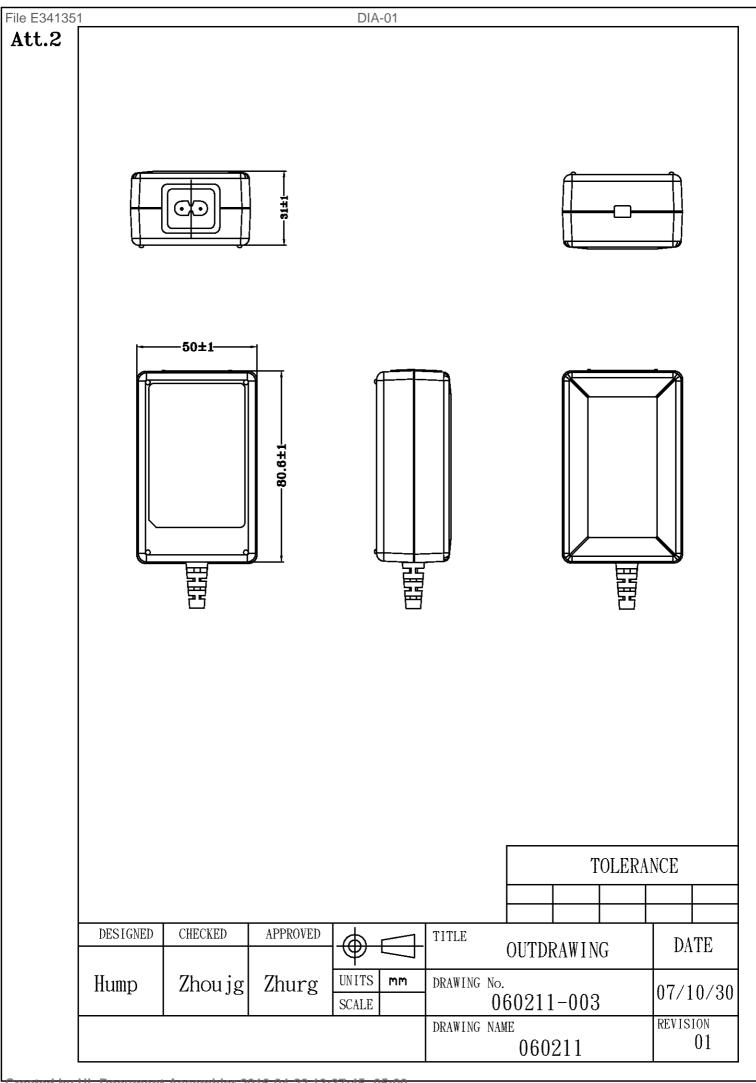
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(Alternate)					
12-08b. Insulation Tape (Alternate)	BONDTEC PACIFIC CO LTD	370S	130 degree C.	OANZ2	UL
13. Internal Glue Materials			Rated V-2 minimum.	QMFZ2	UL
14. Internal Plastic Part Materials			Rated minimum V-2.	QMFZ2	UL
15. PWB	Various	Various	V-0 or better, minimum 130 degree C.	ZPMV2	
16. Label	Various	Various	Minimum 70 degree C. if maximum surface temperature not specified.	PGDQ2, PGJI2	UL
17. Heat Sink (HS1) (Consideration as Primary)	Various	Various	Aluminum, minimum 2.0 mm thick. See Enclosure ID 4-04 for detailed dimensions.		
18. Heat Sink (HS2) (Consideration as Secondary)	Various	Various	Aluminum, minimum 1.0 mm thick. See Enclosure ID 4-05 for detailed dimensions.		
19. Current sense resistor (R10)			0.91 ohm, 1W.		
20. Output Cable	Various	Various	Non-detachable, maximum 1.8 m long, PVC, TFE neoprene, polyimide or marked VW-1, minimum 80 degree C, minimum 30 V, minimum 18 AWG. One end mechanically secured then soldered to PWB, other end is terminated in molded on connector.	AVLV2	UL
21. Strain Relief of Output Cable	Various	Various	For Strain Relief. See Enclosure ID 4-06 for construction details.	QMFZ2	UL

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## **Enclosures**

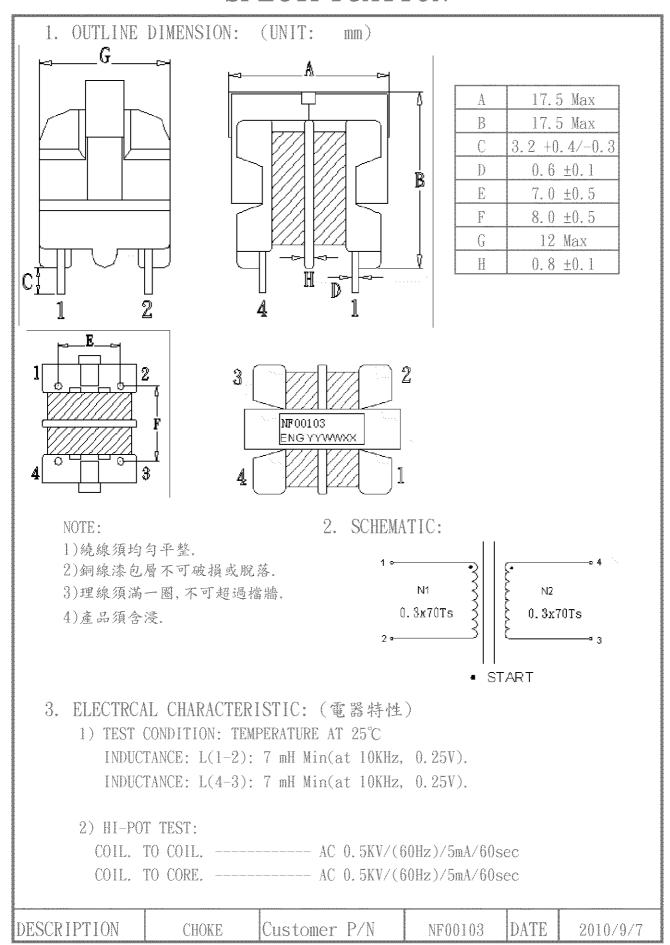
<u>Type</u>	Supplement Id	<u>Description</u>
Diagrams	4-01	Enclosure drawing
Diagrams	4-02	Line Filter NF1 spec.
Diagrams	4-03	Transformer T1 spec.
Diagrams	4-04	Heat sink HS1 drawing
Diagrams	4-05	Heat sink HS2 drawing
Diagrams	4-06	Strain relief drawing
Schematics + PWB	5-01	Layout
Miscellaneous	7-01	Model Differences
Diagrams	4-01	Enclosure drawing
Diagrams	4-02	Line Filter NF1 spec.
Diagrams	4-03	Transformer T1 spec.
Diagrams	4-04	Heat sink HS1 drawing
Diagrams	4-05	Heat sink HS2 drawing
Diagrams	4-06	Strain relief drawing
Schematics + PWB	5-01	Layout
Miscellaneous	7-01	Model Differences



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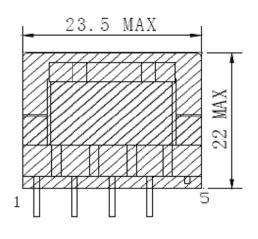
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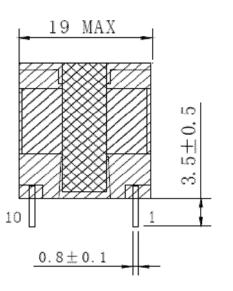
# **SPECIFICATION**

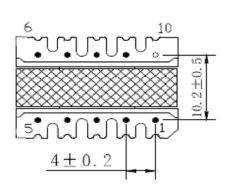


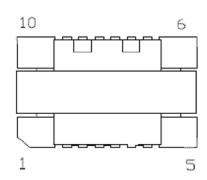
# **SPECIFICATION**

1. OUTLINE DIMENSION: (UNIT: mm)









## NOTE:

- 1. PIN10CUT OFF, PIN5CUT OFF2/3.
- 2. CORE 單邊研磨, 研磨 CORE 放 TOP 端. PIN 端 CORE 须用胶布背胶一层, 外用膠帶 5.5MM 的固定 3TS.
- 3. 产品须含浸。成品后用 20mm 的胶带沿线包方向平齐底部线架档板包 2 圈绝缘.
- 4. 标签内容如图示, YYMM 为生产年周期, 贴于产品 PIN1-5 侧顶部 CORE 上, 字体面向 PIN1-5 脚;
- 5. 各外观尺寸限制如图示。

DESCRIPTION	TRANSFORMER	Customer P/N	XF00916	DATE	2015/1/30

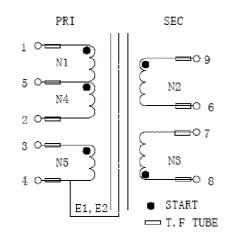
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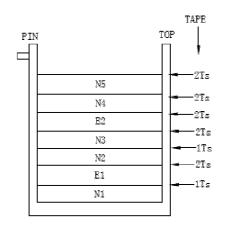
# **SPECIFICATION**

**DIA-03** 

## SCHEMATIC:

## WINDING CONSTRUCTION:





### 4. WINDING TABLE

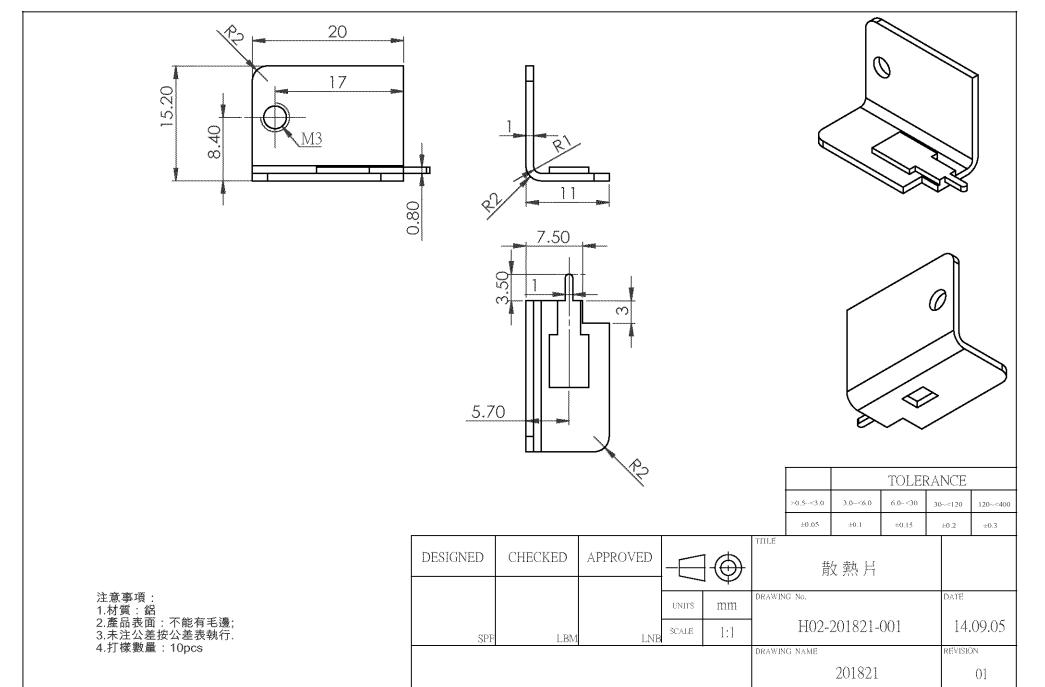
WINDING	MARGIN TAP PAN/TOP	START	FINISH	WIRE SIZE	TURNS	TAPE	NOTES
N1	0/0	1	5	Ф0.18*2Р	60Ts	1Ts	密繞三層
E1	0/0	4	CU	0.025T*7W	0.9Ts	2Ts	居中
N2	0/0	9	6	Ф0.4*4Р	6Ts	1Ts	密繞
N3	0/0	8	7	Ф0.2*1Р	10Ts	2Ts	密繞
E2	0/0	4	CU	0.025T*7W	0.9Ts	2Ts	居中
N4	0/0	5	2	Ф0.18*2P	30Ts	2Ts	密+疏繞
N5	0/0	3	4	Ф0.18*1Р	17Ts	2Ts	中密绕

### NOTE:

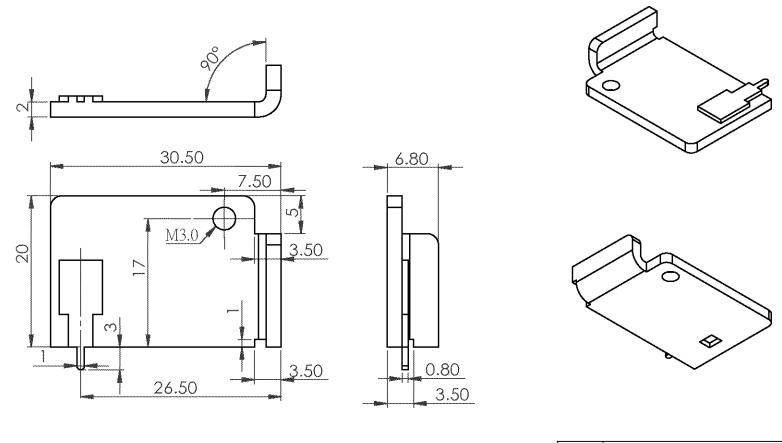
- 1. PIN 朝内, 机器顺时针绕制.
- 2. E1, E2 爲內銅箔(背膠一层反折 2MM MIN),接引線 Φ0. 20\*1P 於 PIN4 腳.
- 3. N1 关绕线前在 PIN6-10 侧 PIN 端贴 7.6MM/W 的 L 型胶布, 待 E1 绕完后反折回线包内 3MM MIN。
- 4. E2 关绕线前在 PIN6-10 侧 PIN 端贴 17MM/W 的 L 型胶布, 待 N5 绕完后反折回线包内 3MM MIN。

DESCRIPTION	TRANSFORMER	Customer P/N	XF00916	DATE	2015/1/30

Att.5



Att.5



## 材質和顏色以BOM爲準,帶\*為重點尺寸

CHECKED

APPROVED

	TOLERANCE					
>0.5~<3.0	3.0~<6.0	6.0<30	30~<120	120~<400		
±0.05	±0.1	±0.15	±0.2	±0.3		

DATE

REVISION

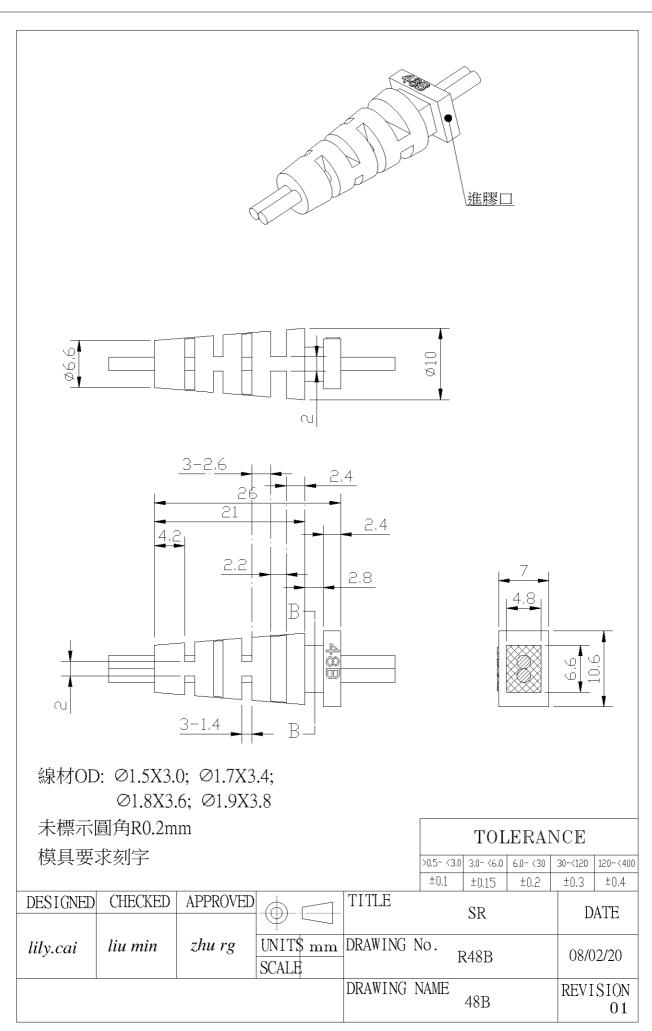
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01

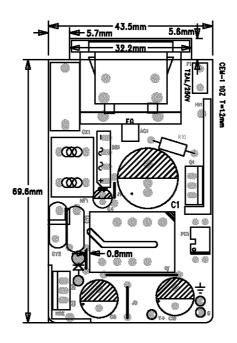
TITLE

DESIGNED

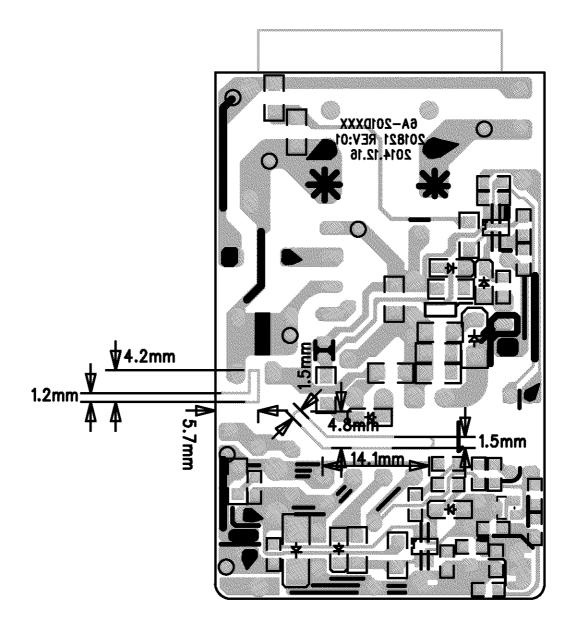
File E341351 DIA-06



File E341351 SCH-01



File E341351 SCH-01



File 🕃 🗗 model name	Output WIS-01 voltage	Output current	Max.W	Transformer	
GT-46200-2005-T2	5V	4A	20W	XF00916	
Created by UL Document Assemb GT-46200-1806-0.05-T2	er 2016-04-22 13: 5.95V	37:45 -05:00 3 <b>A</b>	18W	VERRAID	

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Test Record

### Test Record No. 1

Tests on Model GT-46200-WWVV-X.XX-T2\*\*\*\*\*\* are not required due to copy file from Applicant GLOBTEK (HONG KONG) LTD., E1637433-A149, Vol. X1, change Model name and change Product type from "SWITCH-MODE POWER SUPPLY" TO "ITE POWER SUPPLY"