



TOPCOM TECHNOLOGY CO., LTD

榮昌泰科技有限公司

# APPROVAL SHEET

## 承認書

Customers

(客戶名稱)

Model NO. (產品型號) : TC-68

Description(產品描述) : AC Power Adapter

Issue Date (發行時間) : 2012/06/18

APPROVED

(客戶確認)

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1 SCOPE(應用範圍)

This document describes basic electrical characteristics and mechanical characteristic of 5W class II power adapter.(文檔介紹了一個5瓦二類電源適配器的基本電氣特性和機械特性規格)

2 ELECTRICAL SPECIFICATION(電氣規格)

2.1 INPUT REQUIREMENT(輸入要求)

2.1.1 INPUT VOLTAGE RANGE(輸入電壓範圍)

Power adapter shall operate within input specification from 90Vac to 264Vac or provide automatic switching between high line and low line input ranges. The table below shows common input voltage range.(電源適配器可工作的輸入電壓為90-264V的交流電壓,或高低壓市電的輸入範圍,下表列出了常見的輸入電壓範圍)

Input Range (輸入範圍)	Minimum (最小)	Nominal (典型)	Maximum (最大)	Unit (單位)
	90	100-240	264	Vac, rms

Table 1 - Input Voltage Range

2.1.2 INPUT FREQUENCY RANGE(輸入頻率範圍)

The power adapter shall operate within specification from 47 to 63 Hz.(電源適配器的輸入電壓工作頻率為47~63Hz)

2.1.3 AC INRUSH CURRENT(交流浪湧電流)

Peak inrush current should not exceed 30 A at 230Vac 50Hz, 25 degrees C, cold start. It should not interrupt line fuse or cause damage to the power adapter either at cold or warm start.(在輸入為230Vac/50Hz, 25度的溫度下冷啟動,其浪湧電流不應超過30A,且不可以熔斷保險絲,在冷機或熱機情況都不應對適配器造成傷害)

2.1.4 INPUT CURRENT(輸入電流)

Maximum steady state input current shall not exceed 0.2A for any line voltage specified in 2.1.1.(在表2.1.1中的任一電壓時,其最大的穩態輸入電流不能超過0.2A)

2.1.5 LEAKAGE CURRENT(漏電流)

0.25 mA max. at 230Vac 50Hz.(在230Vac/50Hz輸入時,最大為0.25mA)

2.1.6 INSULATION RESISTANCE(絕緣阻抗)

Insulation resistance shall be more than 50M ohm between primary and secondary 500Vdc.(在初級和次級施於500Vdc時,其絕緣阻抗應大於50M歐)

2.1.7 STANDBY POWER(待機功耗)

Vin	Load	Power consumption
230Vac/50Hz 115Vac/60Hz	0A	< 0.3 W

2.1.8 HI-POT TEST(高壓測試)

Primary to secondary DC 3000V 60 Sec and cut off current should be less than 5 mA.(初級對次級施加3000Vdc,時間60秒,其穿透電流須小於5mA)

2.2 INPUT PROTECTION(輸入保護)

2.2.1 INPUT CURRENT PROTECTION(輸入電流保護)

A fuse with rating of T1 A / 250 V ( Time Lag type ) fuse shall be installed on the input line side near the input connector and no any electrical components before.(使用一顆額定值為T1A/250V的延時保險,安裝在沒有任何零件的輸入側接口處)

2.3 OUTPUT REQUIREMENT(輸出要求)

2.3.1 OUTPUT POWER (輸出功率)

Unit total output power, under steady state conditions, shall not exceed 5 W. (在穩態條件下,其總輸出功率不能超出5W)

2.3.2 OUTPUT VOLTAGE AND CURRENT(輸出電壓及電流)

Under any combination of line and load variation and environmental conditions, all outputs shall remain within tolerance as defined in Table 2. Output voltage(s) shall be measured at the load side of output



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connector.(在任何輸入電壓和負載變化,以及相對的溫度條件下,所有輸出值應在允許的公差範圍內,如表2.應測量在負載的輸出連接器端)

Output Voltage	Voltage Range		Current Range	
	Lower Limit	Upper Limit	Minimum Load	Full rated load
+5V	4.75V	5.25V	0A	1A

Table 2 - Output Voltage and Current

### 2.3.3 RIPPLE AND NOISE (紋波及噪音)

Measurements shall be made with an oscilloscope with minimum of 20MHz bandwidth. Output shall be bypassed at the connector with a 0.1µF ceramic disk capacitor and a 47µF electrolytic capacitor for general testing purpose. (測試示波器的帶寬設定為20MHz,連接器輸出端須並接一顆0.1uF的瓷片電容和一顆4.7uF的電解電容,以達到測試目地)

Output Voltage (输出电压)	Maximum Ripple & Noise (Vp-p)
+5.0V	150mV

Table 3 – Ripple and Noise

### 2.3.4 OVER VOLTAGE PROTECTION(過電壓保護)

N/A

### 2.3.5 OVER CURRENT PROTECTION(過電流保護)

After the supply at rated output reaches temperature equilibrium, over current protection shall be operated within specify 1.6A(max) ,at 115/230 Vac condition test after one hour burn-in and reached temperature equilibrium.(適配器的額定輸出,達至溫度平衡,過流保護在115V/230Vac條件下1.5A最大,老化1小時後達到溫度平衡)

### 2.3.6 OVER TEMPERATURE PROTECTION(過溫度保護)

N/A

### 2.3.7 OVERSHOOT AND UNDERSHOOT(過沖和下沖)

During turn on or turn off, the output overshoot shall not exceed nominal output voltage by more than 10% , and output shall not change its polarity with respect to its return line.(產品開啟或關閉時,輸出過沖不能超過額定電壓10%,不能改變其極性和回線)

### 2.3.8 SHORT CIRCUIT POTECTION(短路電流保護)

Power adapter shall have self-limiting protection to protect against short circuit or overload conditions. No damage to the power adapter shall result from a continuous or intermittent short circuit condition. It will be auto-recovered when the failure is removed.(適配應有自限性保護,防止短路或過載條件下,損壞適配器.從一個持續性或間歇性的短路條件,能夠自動恢復)

### 2.3.9 AUDIBLE NOISE(聽覺噪音)

N/A

### 2.3.10 LIMITED POWER SOURCE

The power supply shall comply with the limited power source requirement as defined in IEC 60950-1 Edition for output independently.(適配器應符合IEC60950-1第二版規定限功率源的輸出要求)

## 2.4 PERFORMANCE REQUIREMENT(性能要求)

### 2.4.1 EFFICIENCY(效率)

Efficiency (watt out / watt in) shall be a minimum of 68% at active average mode.(在平均模式下,其輸出比輸入的百分比效率最小為68%)

### 2.4.2 TURN ON DELAY TIME(開啟延時)

Output shall reach steady state within 3 seconds of turn on at 90Vac or greater. (90Vac輸入時,其輸出到達穩態時的時間為3秒)

### 2.4.3 HOLD-UP TIME(保持時間)

Hold-up time shall be a minimum of 8 mS at 115Vac / 60Hz input.(在115Vac/60Hz輸入條件下,保持時間為8毫秒)  
Hold-up time shall be a minimum of 16 mS at 230Vac / 50Hz input. (在230Vac/50Hz輸入條件下,保持時間為16毫秒)

### 2.4.4 DYNAMIC LOAD(動態負載)



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Power adapter shall operate within regulation defined in section 2.3.2 at following conditions:(適配器應在2.3.2的規定範圍內動作:)

Step load change: from 0.10A to 1.00A Load on the output.(設定負載改變:輸出負載從0.10A到1.00A變化)

Dwell Time: 5ms duty.(停留時間:5毫秒)

Slew rate: 0.1A/usec.(壓擺:0.1A/微秒)

The output overshoot or undershoots:  $\leq \pm 10\%$  output voltage(輸出過沖或下沖:小於或等於10%的輸出電壓)

### 3 ENVIRONMENTAL SPECIFICATION(環境規格)

#### 3.1 TEMPERATURE(溫度)

Operation within specification: 0 to 40 degrees C.(規定操作範圍: 0~40度)

Storage: -20 to 85 degrees C(儲存: -20~85度)

#### 3.2 HUMIDITY(濕度)

Operation: 10% to 90% relative humidity, non-condensation.(工作:10%~90%相對濕度,非凝結)

Storage: 5% to 95% relative humidity, non-condensation.(儲存:5%~95%相對濕度,非凝結)

#### 3.3 VIBRATION AND SHOCK(振動和沖擊)

The power adapter shall withstand forces of 2G at variable recurrent frequencies of 10 to 55Hz and a simulated transportation test. Transportation test will consist of a 1/2G vibration force at the resonant frequencies of the board or components.(適配器應能承受2G力量,在10至55Hz可變頻率和模擬運輸測試力量,運輸測試將包括一個1/2G振動力有响音頻率的电路板或元件)

The test will last for 15 min. The power adapter will be tested in a configuration representative of the intended application with shipping cartons. The power adapter must survive a 50G force for duration of 20mS in all 3 orthogonal planes from normal mounting points.(測試將持續 15 分鐘.適配器將測試在擬裝運箱的应用程序的配置的代表电源适配器必須生存在正常安裝點的所有 3 個正交平面的持續時間為 20ms 的 50G 力量。

### 4 APPLICATION STANDARD & RELATED SPECIFICATION(應用標準及相關規範)

#### 4.1 STANDARD & SAFETY(安全標準)

##### 4.1.1 SAFETY STANDARD(安全標準)

Meet
CE EN55022
FCC CFR 47 PART 15 B
CB IEC60950
GS-TUV EN60950
UL/C-UL UL60950
BSMI CNS14436
PSE J60950

##### 4.1.2 EMI(電磁干擾)

FCC 15(Class-B, 115Vac operation)

CISPR 22(Class-B, 230Vac operation)

EN55022(Class-B)

##### 4.1.3 EMS(電磁敏感)

Refer IEC61000-4-2

Energy Storage Capacitor 150pF Discharge resistor 330Ω.

( Air Discharge:  $\pm 8KV$  min. Contact Discharge:  $\pm 4KV$  min.)

Refer IEC61000-4-4 level 3

Impulse:  $\pm 1kV$  applied to L, N and chassis, pulse frequency 5kHz, period 5 min. input voltage 110Vac and full load.

Refer IEC61000-4-5 level 3

$\pm 1kV$  applied between line and line, pulse rise time 1.2us and duty time 50uS, 5 times test each one.

##### 4.1.4 LPS(限功率源)

Meet IEC60950-1 test standards(符合IEC60950-1相關測試標準)



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**4.1.5 ENVIRONMENT STANDARDS(環境標準)**

**Meet RoHS regulation(符合RoHS法令)**

**4.1.6 Energy efficiency rating(能效等級)**

**Meet EPS standards Level-V(符合外部電源能效標準V級要求)**

**5 MECHANICAL SPECIFICATION (機械特性)**





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5.1 AC ADAPTER EXTERNAL DIMENSION(適配器外部尺寸)

		 驱动方科技(深圳)有限公司	
		图名	TC-06U060100-B
		图号	TC-05USP-G-001
		文件编号	WI-EN-D-F-252401
1	发行	胡佩军	20110601
	项目内容	制图	日期
		承认	
		单位	

5.2 LABEL DRAWING(銘板圖)



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**TOPCOM** 交流電源供應器

型號:TC-68

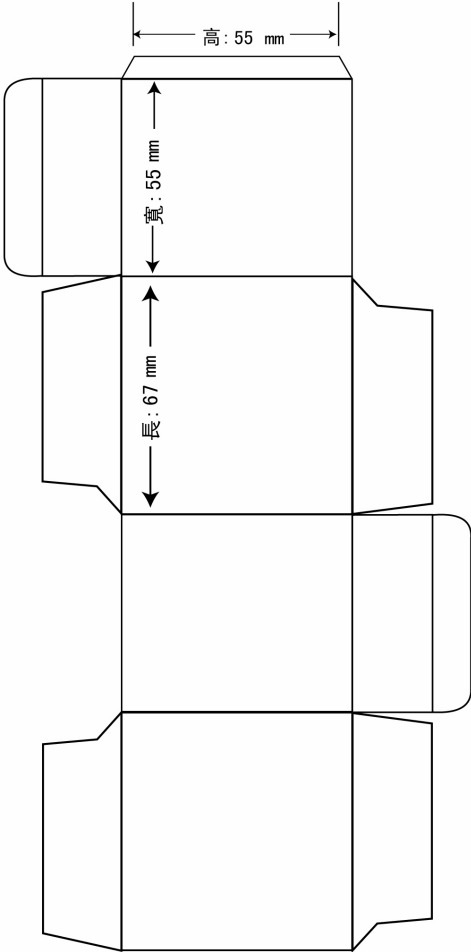
輸入:AC100-240V 50/60Hz 0.2A

輸出:DC 5V 1A



MADE IN CHINA

5.3 PACKING DRAWING(包裝圖)

<p><b>驅動力科技（深圳）有限公司</b></p> <p><b>小白盒規格書</b></p>						
文件編號: WI-EN-D-G-261801		版本: 3.0		日期: 2012-06-18		
規格用途: T-68充電器白盒, 每個裝1pcs				箱號:		
<p>小白盒展開圖:</p> 						
小白盒	料號:	1-19-6-00102	品名:	白盒Y號 67x55x55mm (350g)	用量:	1/1
	材質:	350g粉灰	尺寸:	長: 67mm      寬: 55mm      高: 55mm		
備注:						
復核: _____		審核: _____		制作: 左妙		



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# 驅動力科技（深圳）有限公司 紙箱規格書

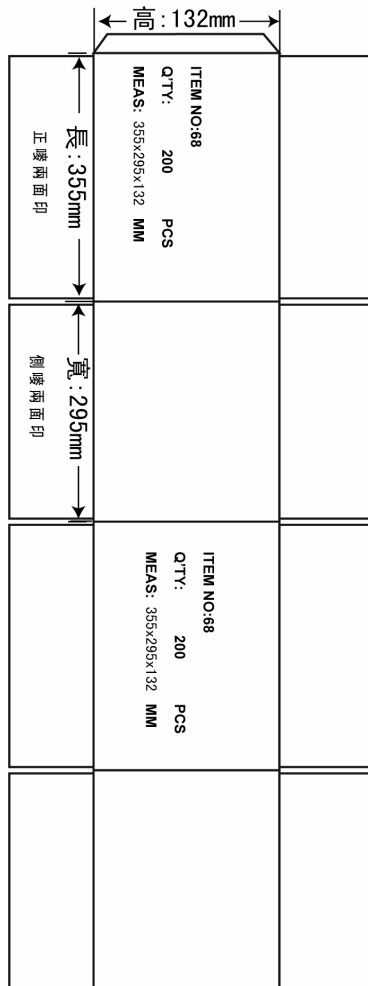
文件編號: WI-EN-D-G-261802

版本: 3.0

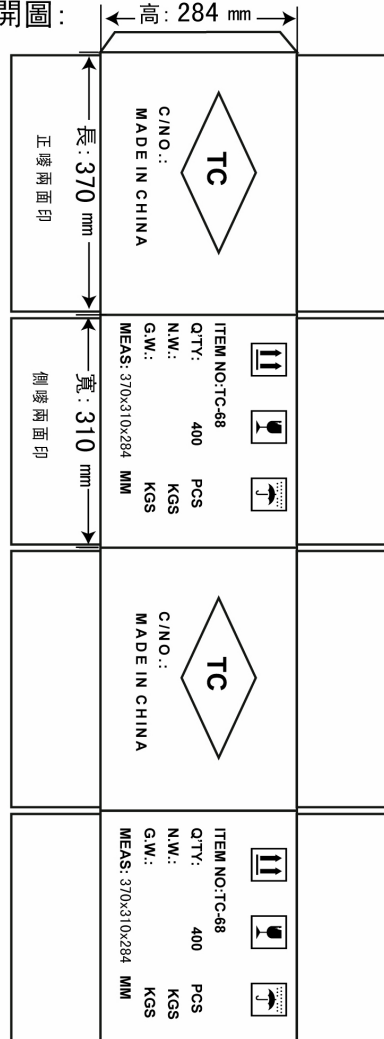
日期: 2012-06-18

用途: TC-68充電器紙箱, 白盒包裝每箱裝400pcs	箱號:
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內箱展開圖:



外箱展開圖:



內箱	料號:	1-19-1-00574	品名:	內箱24號 355x295x132mm (A=A)	用量:	1/200
	材質:	A=A	尺寸:	長: 355mm 寬: 295mm 高: 132mm		
外箱	料號:	1-19-1-00575	品名:	外箱24號 370x310x284 (A=A)	用量:	1/400
	材質:	A=A	尺寸:	長: 370mm 寬: 310mm 高: 284mm		
備注						

復核: \_\_\_\_\_ 審核: \_\_\_\_\_ 制作: 左妙