

MODEL LIST: ADP-65CG BA

1 測試注意事項內容，未經工程師許可，不可任意變更。

Test Notice contents shall not be changed or revised without engineer permission.

2 此測試規格用於主線測試，所有項目均需被測試，因設備或線速限制無法全數測試時，需測試 **worst case**，QC 需按抽樣標準做抽樣測試。

The production line shall perform all or worst test items/conditions, and QC shall follow the sampling plan to perform the sampling test.

3 測試注意事項：

a. 功能測試時，電子負載需設定 4.5V Von 點。

b. OVP 測試時，輸出電壓超過規格且時間超過 250mS，則判定 Fail。

c. Overshoot 測試時，輸出電壓超過規格且時間超過 10mS，則判定 Fail。

d. Common Mode Noise 測試只需滿足客戶規格。

The common mode noise when measure in accordance with IEC 62684 shall not exceed follow below requirement (Test condition following with Full load (per step) by each 10% load)

- AC Input Voltage: **90Vac/60Hz & 264Vac/50Hz**.
- The peak-to-peak voltage measured in the frequency range of 10KHz to 100KHz shall not exceed **150mV** peak-to-peak.
- The peak-to-peak voltage measured in the frequency range of 100KHz to 400KHz shall not exceed **150mV** peak-to-peak.

e. Loop gain 測試只需滿足以下條件

○ HP 測試條件：輸入電壓 90Vac；264Vac，輸出負載 0.25W；Max load(不測試台達規格)。

○ 測試規格：Gain 大於 6db，Phase 大於 45deg。

測試前需熱機且輸出端需並聯 220uF/50V 電容。

擾動電壓範圍 0.3V~1.77V

○ 將 R153 換成 20ohm 電阻，由該電阻進行 loop gain 量測，線路如下所示：



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Date

Drawn

Design (EE)

Design (ME)

07/11/2024

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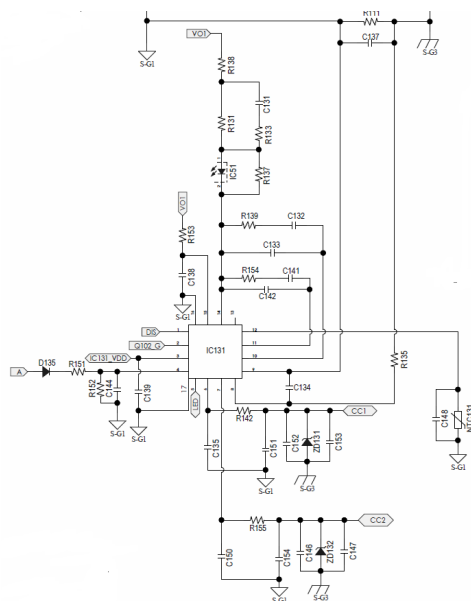
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- f. 噪音測試 HP acoustic noise 測試，不測試輸出 10%、20% load 及 5V 輸出條件。
內規部分以 100Hz~20KHz 的 30db 條件判定。
- g. No Load 測試，輸出端不接測試治具且只測試輸出 5V 的條件。
- h. Hi-Pot 測試時 AC cable 需使用兩芯線。
- i. ISN 測試須滿足規格 over 6db。
- j. AC ON-OFF 測試時，5V 設定 $V_{on}=3V$ ，9V、15V、20V 設定 $V_{on}=6V$ ，所有輸出只測 3A 條件。
- k. CC pin pulse width 測試：此 tpulse1_bmc 於 0.4375V level 時需符合 1.4uS ~ 1.8uS 範圍內。



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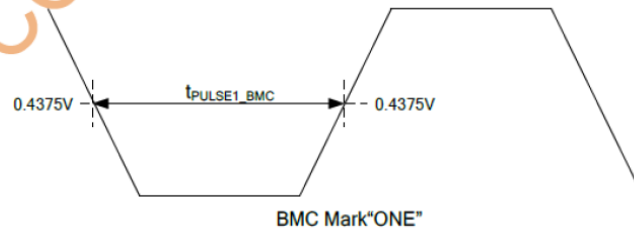
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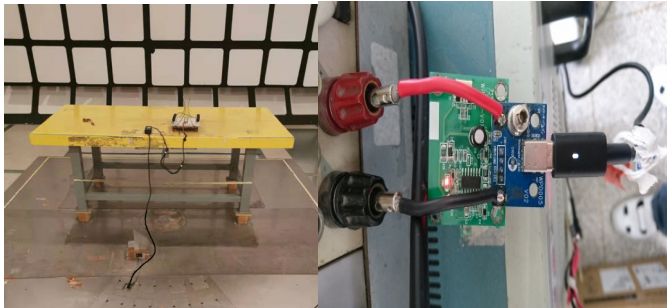
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*(1) Pulse width of transmitted BMC "ONE" signal



- l. RFI 與 EMI 測試架設擺放方式(1.8 米線)。DQA 階段中 BU-HEAD 同意 6bd 進行判定。
- m. RFI & EMI 必須在 EMC Lab(科研大樓)測試。



圖一 . RFI 測試 lab 擺放方式(不接 50ohm 阻抗)。及 EMI 與 RFI 等相關測試要使用偉銓治具測試。

- n. 溫度測試注意事項 (請依 HP 的測試方式測試)
 - 測試零件溫度時(輸入電壓 90V/60Hz)，每台樣品只可以埋 20 條溫度線，且測試環境電木架高。
 - 測試 case 表面溫度時(輸入電壓 100V/60Hz),使用#30 點溫線點溫度，且測試環境電木架高。
- o. Transient Load 測試時，先開機輸出再並聯系統電容 220uF。
- p. ATS 全程並聯系統電容 100uF



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4. 手調測試站：

a. **Full Load Test**：檢查滿載輸出是否符合規格。

b. **Min Load Test**：檢查輕載輸出是否符合規格。

c. **OVP Test**：(量產後不需測試)

Load Condition：5V/3A、9V/3A、15V/4.33A、20V/3.25A

測試方法：短路 IC51 pin1 & pin2 檢查輸出電壓需小於下表，OVP 動作模式為 Latch off。

NOMINAL OUTPUT VOLTAGE (V)	OVER VOLTAGE MAXIMUM
5V	7.25V
9V	13.05V
15V	21.75V
20V	29.00V

d. **OTP Test**：

Load Condition：5V/3A、9V/3A、15V/4.33A、20V/3.25A

測試方法：NTC131 並聯 1K ohm 電阻，檢查輸出電壓是否 shutdown 或 Latch off。

e. **AC On/Off**：

Power supply 連續開關機 On= 5 秒；Off= 5 秒各 5 次後，必須無損壞情形。

f. **抽載測試輸出**：Connector 需掛 10uF & 1uF 的輸出電容做為測試。



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5. Function test (ATS) procedure :

Input Specification Table :

Input Voltage	Minimum	Maximum	Nominal(Rated)
90Vac~265Vac	90Vac	265Vac	100Vac & 240Vac

Output Specification Table : (此機種輸出會變電壓，但輸出電壓一次只會單獨存在一種電壓。)

Output	OUTPUT VOLTAGE			OUTPUT CURRENT	
	MIN	NOMINAL	MAX	MIN	MAX
5V	4.75V	5V	5.25V	0A	3A
9V	8.55V	9V	9.45V	0A	3A
15V	14.25V	15V	15.75V	0A	4.33A
20V	19.0V	20V	21V	0A	3.25A

Test Item	Vin	Load	Spec	Remark
Inrush Current	264V/50Hz; Phase 90°	5V/3A	shall be limited to a 29% margin of the I ² T rating of the input fuse and bridge rectifier.	
Turn On Time	90V/47Hz	3A	< 5Sec	Only output 5V
Hold up Time	115V/60Hz	5V/3A 9V/3A 15V/4.33A 20V/3.25A	>5mSec	Max Load
			> 10mSec	80%Max Load
Rise Time	90V/47Hz& 265V/63Hz	0V to 5V 5V to 9V 5V to 15V 5V to 20V	< 275mSec	Max Load
Fall Time	90V/47Hz& 265V/63Hz	3A	NA	Only output 5V



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Line Regulation	90/115/230/265V 47/63Hz	0A & 5V/3A 9V/3A 15V/4.33A 20V/3.25A	19V ~ 21V(20V) 14.25V ~ 15.75V(15V) 8.55V ~ 9.45V(9V) 4.75V ~ 5.25V(5V)	Remark: 不須計算 CPK .
Load/Combine Regulation	90/115/230/265V 47/63Hz	5V/3A 9V/3A 15V/4.33A 20V/3.25A	19V ~ 21V(20V) 14.25V ~ 15.75V(15V) 8.55V ~ 9.45V(9V) 4.75V ~ 5.25V(5V)	5V 只測試不判定 . Remark: 不須計算 CPK .
Overshoot	90/115/230/265V 47/63Hz	0A & 5V/3A 9V/3A 15V/4.33A 20V/3.25A	21 volts peak(20V) 15.75 volts peak(15V) 9.45 volts peak(9V) 5.25 volts peak(5V)	volts peak not be outside the regulation requirements for more than 10 milliseconds (mS)
			5.6 volts peak(5V)	For 產線測試
Ripple & Noise	100V/50Hz	0A & Max Load	< 380mVp-p	1uF/10uF Oscilloscope at 10KHZ to 20MHz bandwidth Remark:不須計算CPK
Transient Load	90V/47Hz & 265V/63Hz	0.0A~1.5A 1.5A~3.0A 0.0A~2.7A	4.5V-5.5V(5V)	slew rate is 1A/us, Setting Time is 1Hz&5KHz Duty Cycle 50%. system capacitance 220uF/50V Remark:不須計算CPK
		0.0A~1.5A 1.5A~3.0A 0.0A~2.7A	8.1V-9.9V(9V)	
		0.1A ~ 2.165A Load 2.165A ~ 4.33A Load 0A ~ 3.897A Load	13.5V-16.5V(15V)	
		0.1A ~ 1.625A 1.625A ~ 3.25A 0A ~ 2.925A	18.0V-22.0V(20V)	
Peak Load	100V/60Hz & 265V/63Hz	97%Max load(19ms)~ 150% Max load(1ms)	13.5V-16.5V(15V) 18.0V-22.0V(20V)	With system cap 220uF Output 15V, 20V Remark: 不須計算 CPK .
		97%Max load(18ms)~ 125% Max load(2ms)		
		75%Max load(10ms)~ 110% Max load(10ms)		
Short Circuit Protection	90V/47Hz & 265V/63Hz	0A & Max Load Turn on then short	Latch after SCP 10 second	

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Over Current Protection	90/60Hz 265Vac/60Hz	5V/3.45A~3.75A 9V/3.45A~3.75A 15V/4.97A~5.42A 20V/3.73A~4.06A	115%~125% Latch after 10 second	電流斜率 0.1A/1.2S Remark: 不須計算 CPK
Input Current	90V/47Hz	5V/3A 9V/3A 15V/4.33A 20V/3.25A	< 1.6A	
Average Efficiency	115V/60Hz & 230V/50Hz	25%, 50%, 75% & 100% Load	> 86% (20V/3.25A) > 86% (15V/4.33A) > 84.3% (9V/3A) > 78.84% (5V/3A)	Cold For 產線測試 Remark: 不須計算 CPK .
			> 89% (20V/3.25A) > 89% (15V/4.33A) > 87.3% (9V/3A) > 81.84% (5V/3A)	Hot Remark: 不須計算 CPK .
Pin at No Load	115V/60Hz& 230V/50Hz	No Load	< 70mW	Only output 5V Remark: 不須計算 CPK .
Pin at standby Load	115V/60Hz& 230V/50Hz	0.15W 0.5W 1.0W 1.5W	0.3W 1.0W 1.7W 2.4W	Remark: 不須計算 CPK .

Note 1: After completes required DVT test matrix, identifies and selects the worst case condition for the Production MTR. It is not required that all test conditions be tested. Example: If worst case condition for Output Ripple is minimum input voltage and maximum dc load, then that is the test condition to be used.

6. Safety

6.1 Hi-POT test :

6.1.1 Primary to Secondary use 3000+10% Vac. (Rise time : DC=1Sec, AC=0.1Sec)

Cut off current : Hi-Limit 10mA, Lo-Limit 0.02A.

Note: Testing time for production line is 1 minute at EVT/DVT stage and 1 Second at PVT/MP stage.


Following is Arcing sense setting at each stage : EVT1: 8mA, EVT2/DVT: 10mA, PVT/MP: 12mA

6.2 Insulation Resistance (IR)test:

N/A .

6.3 Leakage Current test :

250Vac/50Hz <= 30uA .

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7. Burn-in 測試作業規範

7-1. Ambient is 35°C, Vin = 220Vac, 80% rated load。


7-2. Burn-in 時間定義

7-2-1. P/R 階段 B/I 時間 32 hours，輸出電壓與 B/I 時間分配如下：

- (1).輸出電壓 5V，B/I 時間 8 hours。
- (2).輸出電壓 9V，B/I 時間 8 hours。
- (3).輸出電壓 15V，B/I 時間 8 hours。
- (4).輸出電壓 20V，B/I 時間 8 hours。

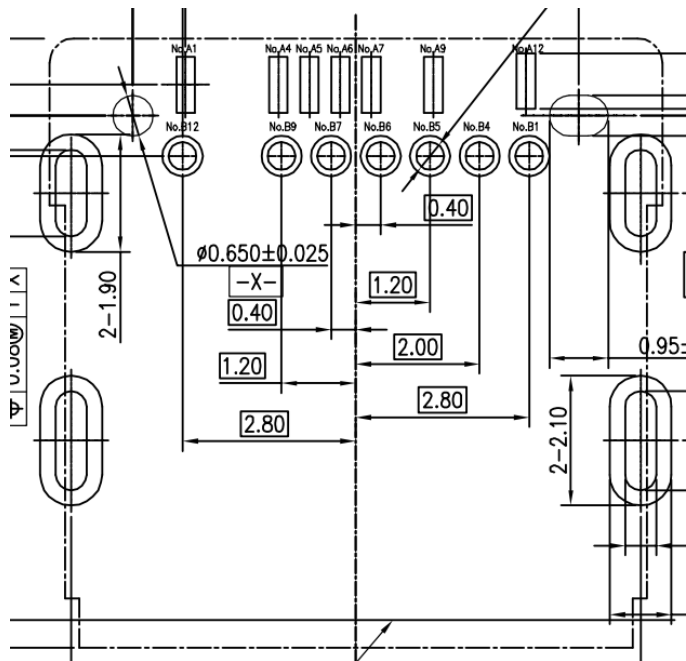
7-2-2. MP 階段 B/I 時間根據產品的品質穩定性調整 B/I 時間。

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8. USB Connector & Power Cord Pin 定義與相關測試

8-1. Pin 定義與描述：



USB Connector 示意圖

USB Type-C Pin Assignments

No.	Pin Number	Signal Name
1	A1	GND
2	A4	Vbus
3	A5	CC1
4	A6	Dp1
5	A7	Dn1
6	A9	Vbus
7	A12	GND

No.	Pin Number	Signal Name
8	B12	GND
9	B9	Vbus
10	B7	Dn2
11	B6	Dp2
12	B5	CC2
13	B4	Vbus
14	B1	GND



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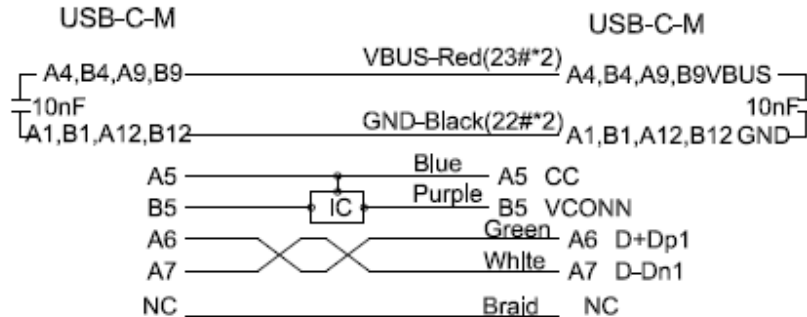
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DC Power Cord 示意圖

PIN ASSIGNMENT



8-2 : 相關測試：

(1). 各 PIN 短路開路定義

GND Pin：A1，B1，A12，B12 需短路。VBUS Pin：A4，B4，A9，B9 需短路。

CC Pin：A5

CC2 Pin: B5

D+D- Pin: A6, A7 需短路

其餘未定義的各 Pin 開路。



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