

# TEST REPORT

Report No. : HT10010/2005

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Date : March 9, 2005

YEONG YANG TECHNOLOGY CO., LTD.  
12F, 778-1, CHUNG CHENG ROAD,  
CHUNG HO CITY, TAIPEI HEIEN, TAIWAN, R.O.C.

The following merchandise was submitted and identified by the vendor as:

Product Description: ATX Thermally Advantage Chassis

Chassis Model #: YY-A2 Series

Component	Present/Not Present	Part #	Type (Size)
Chassis		YY-A210	microATX
Power Supply Unit		SFX-270A1	SFX12V
System Fan 1	No		( mm× mm× mm)
System Fan 2	No		( mm× mm× mm)
System Fan 3	No		( mm× mm× mm)

Manufacturer: Yeong Yang Technology Co., Ltd.

We have tested the submitted sample(s) as requested and the following results were obtained:

Test Required :  Mechanical Fit Test for ATX Chassis  
 Thermal Test for ATX Chassis

Test Procedures	
Title	Rev
Third Party Test House Intel® Pentium®4 Processor on 90 nm process in the 775-land package with PRB = 1 ATX Thermally Advantage Chassis	2.04

Test Results :

Conclusion
Submitted Chassis, model YY-A2 Series (Part # YY-A210), meets Mechanical Fit Success Criteria and also meets Thermal Performance Success Criteria without Discrete Graphics Load Card installed.

- \* SGS will not approve any e-form report without SGS's digital signature.
- \* SGS will retain one sample from the articles to be tested for a period of six months.

Signed for and on behalf of  
SGS TAIWAN Ltd.

Terence Hsieh  
Supervisor

## Revision Table

Rev	Date	Comment
1.0	March 9, 2005	Initial Release

## Date of tests

Test Started	Test Completed
January 5, 2005	March 1, 2005

## Test Sequence

Test Action/ Item	Test Sequence
Mechanical Fit Test	1
Thermal Test	2
Data Analysis	3
<b>1. Thermal testing will be performed on two samples. Mechanical fit testing will be performed on one of the two samples.</b>	
<b>2. If the chassis does not pass mechanical fit testing, thermal test shall be skipped.</b>	

## Hardware Under Test

### 1. Materials Under Test (MUT)

Component	Information	Comments
<b>Chassis</b>		
Part Number	YY-A210	
Model Number	YY-A2 series	
Form Factor	microATX	
Chassis Duct Type	Meets Chassis Air guide version 1.1	
<b>Power Supply Unit</b>		
Manufacturer	SIRTEC	
Part Number	SFX-270A1	
Form Factor	SFX12V	
Maximum Rated Wattage	270W	
Compliant to Design Guide Version	2.01	
5V current rating (Amps)	20	
12V current rating (Amps)	for V1: 8A; for V2: 15A	
3.3V current rating (Amps)	18	
24 Pin main power connector	Yes	
Number of Serial ATA connectors	1	
<b>System Fan 1</b>		
Is System Fan1 Present?	No	
Manufacturer		
Part Number		
Size		
Location		
Number of Wires		
Pin Out or Color Code		
Voltage		
Current		
<b>System Fan 2</b>		
Is System Fan 2 Present?	No	
Manufacturer		
Part Number		
Size		
Location		
Number of Wires		
Pin Out or Color Code		
Voltage		
Current		
<b>System Fan 3</b>		
Is System Fan 3 Present?	No	
Manufacturer		
Part Number		
Size		
Location		
Number of Wires		
Pin Out or Color Code		
Voltage		
Current		

## Hardware Under Test

### 2. Support Hardware

Component	Information	Comments
<b>Heatsink</b>		Intel-Provided
Part Number	C63987-203	
Manufacturer	Nidec Corporation	
Technology	Radial Fin	
<b>Clip</b>	Integrated with heatsink	Intel-Provided
<b>Thermal Interface Material</b>		Intel-Provided
Manufacturer	Honeywell*	
Part Number	PCM45F	
Type	Phase change pad	
<b>Retention Mechanism Assembly</b>		Intel-Provided
Manufacturer	Nidec Corporation	
Part Number	N/A	
Technology	Plastic Push Fasteners	
<b>Processor</b>	Intel® Pentium® 4 processor at 3.6Ghz (LGA775)	Intel-Provided
<b>Motherboard</b>	Intel Desktop Board	Intel-Provided
Part Number	D915GUXL	
Manufacturer	Intel	
Form Factor	microATX	
<b>Memory</b>		Intel-Provided
Manufacturer	Samsung	
Part Number	MT16HTF6464AY-53EB2	
Type	DDR2 533	
Size	512MB	
Location	DIMM 0 and DIMM 1	
<b>PCI Thermal Load Card #1</b>	Not Populated	Intel-Provided
<b>PCI Thermal Load Card #2</b>	5.5 Watts	Intel-Provided
<b>Discrete Graphics Load Card</b>		Intel-Provided
Manufacturer	-	
Model Number	Not Populated	
<b>Hard Disk Drive</b>		Intel-Provided
Manufacturer	Seagate	
Model Number	ST380023AS	

**Test Equipment:**
Test Equipment for Mechanical Fit Test:

Equipment Description	Brand	Model	Serial No.	Calibration Date
Mechanical Fit Gauge	Intel	-	-	N/A

Test Equipment for Thermal Test:

Equipment Description	Brand	Model	Serial No.	Calibration Date
Data Acquisition	Fluke	2640A	8425002	2004/3/4
Data Acquisition	Fluke	2640A	8421017	2004/3/4

## Images



## **Test Specifications and Results:**

### **1. Mechanical Fit Testing:**

#### **1-1 Mechanical Fit Test Method/ Specifications:**

- To check for interferences between the chassis and the mechanical/ volumetric fit board gauge per micuoATX specifications.
- Confirm the sufficient length of all front panel I/O connector cables.
- If the chassis submitted does not first pass mechanical fit testing, it will not be tested for thermal compliance.
- Sample quantity: 1

**Test Specifications and Results:**
**1-2 Mechanical Fit Test Result**

DATE STARTED	CUSTOMER	TECHNICIAN
2005/1/5	YEONG YANG TECHNOLOGY CO., LTD.	Samuel Mo
DATE COMPLETED	SPECIMEN DESCRIPTION	
2005/3/1	YY-A2 Series (YY-A210)	
TEMPERATURE	TYPE OF TEST	
25±3 (°C)	Mechanical Fit Testing	
HUMIDITY	MANUFACTURER	
55±20 (% RH)	Yeong Yang Technology Co., Ltd.	
TEST SPECIFICATION		
Third Party Test House Intel® Pentium®4 Processor on 90 nm process in the 775-land package with PRB = 1 ATX Thermally Advantage Chassis (Rev.2.04)		

Component	Description	Results	Comments
KOZ A	Keep Out Zone A 0.3" Clearance	Pass	Fan interferes with I/O zone
KOZ B	Keep Out Zone B Clearance	Pass	
All KOZ	Examination of common interferences among all Keep Out Zones	Pass	
I/O Zones	Back Panel Input/Output Keep Out Zone Clearance	Pass	

### Test Specifications and Results:

#### 1-2 Mechanical Fit Test Result-- Continued

Component	Description	Results	Comments
Mounting Holes -- microATX Chassis	Board holes are supported and other standoffs are removable	Pass	
Cable Length	Checks for adequate length cables for subsystem components		
	USB	Pass	
	Audio	Pass	
	Power	Pass	

Note: Physically interfere = cannot be installed in any order



**Test Specifications and Results:****2. Thermal Testing:****2-1 Thermal Test Method/ Specifications**

- Hardware installed in the submitted chassis with thermocouples attached.
- The test is conducted in a constant temperature thermal chamber set to 35°C.
- A processor stress program is executed to generate a thermal load to the system.
- $T_C$  (Case Temperature) measured at the geometric center of the Integrated Heat Spreader (IHS).
- $T_A$  (Ambient Temperature) measured with 4 thermocouples equispaced 0.100" above the fan, halfway between hub and housing horizontally.
- $T_{Inlet}$  (Inlet Temperature) measured with 1 thermocouples placed in the center of chassis inlet vent.
- System fans are controlled by the motherboard as they would be in a default system build configuration.
- Sample quantity: 2

**Test Specifications and Results:**
**1-2 Thermal Test Result**

DATE STARTED	CUSTOMER	TECHNICIAN
2005/1/5	YEONG YANG TECHNOLOGY CO., LTD.	Samuel Mo
DATE COMPLETED	SPECIMEN DESCRIPTION	
2005/3/1	YY-A2 Series (YY-A210)	
TEMPERATURE	TYPE OF TEST	
25±3 (°C)	THERMAL TESTING	
HUMIDITY	MANUFACTURER	
55±20 (% RH)	Yeong Yang Technology Co., Ltd.	
TEST SPECIFICATION		
Third Party Test House Intel® Pentium®4 Processor on 90 nm process in the 775-land package with PRB = 1 ATX Thermally Advantage Chassis (Rev.2.04)		

Thermal Data										
Test #	P (at 85% MaxPower) (W)	T <sub>A1</sub> (°C)	T <sub>A2</sub> (°C)	T <sub>A3</sub> (°C)	T <sub>A4</sub> (°C)	T <sub>A</sub> (°C)	T <sub>c</sub> (°C)	Thermal Control Circuitry Activate?	Reported Frequency (MHz)	Tinlet (°C)
1	110.00	35.36	35.92	35.22	35.25	35.44	76.73	No	3600	34.92
2	110.00	35.20	35.82	35.03	35.09	35.29	76.66	No	3600	34.75

**Criteria**

Thermal Performance Criteria	
T <sub>A</sub> (°C) = 38C + 1C (error margin)	38C + 1C
Note: If the thermal control circuitry activates during testing for any sustained period this will result in an automatic test failure	

**Pass / Fail**

Average	Target	
T <sub>A</sub> (°C)	T <sub>A</sub> (°C)	Meets Thermal Performance Criteria?
35.36	39.00	Meets Ambient Thermal Performance Criteria

## Appendix 附錄

**General Conditions of Service****1 General**

(a) Unless otherwise agreed in writing or except where they are at variance with (i) the regulations governing services performed on behalf of governments, government bodies or any other public entity or (ii) the mandatory provisions of local law, all offers made or services provided by SGS Société Générale de Surveillance SA or any of its affiliated companies or any of their agents (each a "Company") and all resulting contracts or other arrangements shall be governed by these general conditions of service (hereinafter the "General Conditions").

(b) The Company may perform services for persons or entities (private, public or governmental) issuing instructions (hereinafter, the "Client").

(c) Unless the Company receives prior written instructions to the contrary from Client, no other party is entitled to give instructions, particularly on the scope of the services or the delivery of reports or certificates resulting therefrom (the "Reports of Findings"). Client hereby irrevocably authorises the Company to deliver Reports of Findings to a third party where so instructed by Client or, at its discretion, where it implicitly follows from circumstances, trade custom, usage or practice.

**2 Provision of Services**

(a) The Company will provide services using reasonable care and skill and in accordance with Client's specific instructions as confirmed by the Company or, in the absence of such instructions:

- (1) the terms of any standard order form or standard specification sheet of the Company; and/or
- (2) any relevant trade custom, usage or practice; and/or
- (3) such methods as the Company shall consider appropriate on technical, operational and/or financial grounds.

(b) Reports of Findings issued further to the testing of samples contain the Company's opinion on those samples only and do not express any opinion upon the lot from which the samples were drawn.

(c) Should Client request that the Company witness any third party intervention, Client agrees that the Company's sole responsibility is to be present at the time of the third party's intervention and to forward the results, or confirm the occurrence, of the intervention. Client agrees that the Company is not responsible for the condition or calibration of apparatus, instruments and measuring devices used, the analysis methods applied, the qualifications, actions or omissions of third party personnel or the analysis results.

(d) Reports of Findings issued by the Company will reflect the facts as recorded by it at the time of its intervention only and within the limits of the instructions received or, in the absence of such instructions, within the limits of the alternative parameters applied as provided for in clause 2(a). The Company is under no obligation to refer to, or report upon, any facts or circumstances which are outside the specific instructions received or alternative parameters applied.

(e) The Company may delegate the performance of all or part of the services to an agent or subcontractor and Client authorises Company to disclose all information necessary for such performance to the agent or subcontractor.

(f) Should Company receive documents reflecting engagements contracted between Client and third parties or third party documents, such as copies of sale contracts, letters of credit, bills of lading, etc., they are considered to be for information only, and do not extend or restrict the scope of the services or the obligations accepted by the Company.

(g) Client acknowledges that the Company, by providing the services, neither takes the place of Client or any third party, nor releases them from any of their obligations, nor otherwise assumes, abridges, abrogates or undertakes to discharge any duty of Client to any third party or that of any third party to Client.

(h) All samples shall be retained for a maximum of 3 months or such other shorter time period as the nature of the sample permits and then returned to Client or otherwise disposed of at the Company's discretion after which time Company shall cease to have any responsibility for such samples. Storage of samples for more than 3 months shall incur a storage charge payable by Client. Client will be billed a handling and freight fee if samples are returned. Special disposal charges will be billed to Client if incurred.

**3 Obligations of Client**

The Client will:

- (a) ensure that sufficient information, instructions and documents are given in due time (and, in any event not later than 48 hours prior to the desired intervention) to enable the required services to be performed;
- (b) procure all necessary access for the Company's representatives to the premises where the services are to be performed and take all necessary steps to eliminate or remedy any obstacles to, or interruptions in, the performance of the services;
- (c) supply, if required, any special equipment and personnel necessary for the performance of the services;
- (d) ensure that all necessary measures are taken for safety and security of working conditions, sites and installations during the performance of services and will not rely, in this respect, on the Company's advice whether required or not;
- (e) inform Company in advance of any known hazards or dangers, actual or potential, associated with any order or samples or testing including, for example, presence or risk of radiation, toxic or noxious or explosive elements or materials, environmental pollution or poisons;
- (f) fully exercise all its rights and discharge all its liabilities under any relevant sales or other contract with a third party and at law.

**4 Fees and Payment**

- (a) Fees not established between the Company and Client at the time the order is placed or a contract is negotiated shall be at the Company's standard rates (which are subject to change) and all applicable taxes shall be payable by Client.
- (b) Unless a shorter period is established in the invoice, Client will promptly pay not later than 30 days from the relevant invoice date or within such other period as may be established by the Company in the invoice (the "Due Date") all fees due to the Company failing which interest will become due at a rate of 1.5% per month (or such other rate as may be established in the invoice) from the Due Date up to and including the date payment is actually received.

(c) Client shall not be entitled to retain or defer payment of any sums due to the Company on account of any dispute, counter claim or set off which it may allege against the Company.

(d) Company may elect to bring action for the collection of unpaid fees in any court having competent jurisdiction.

(e) Client shall pay all of the Company's collection costs, including attorney's fees and related costs.

(f) In the event any unforeseen problems or expenses arise in the course of carrying out the services the Company shall endeavour to inform Client and shall be entitled to charge additional fees to cover extra time and cost necessarily incurred to complete the services.

(g) If the Company is unable to perform all or part of the services for any cause whatsoever outside the Company's control including failure by Client to comply with any of its obligations provided for in clause 3 above the Company shall nevertheless be entitled to payment of:

- (1) the amount of all non-refundable expenses incurred by the Company; and
- (2) a proportion of the agreed fee equal to the proportion of the services actually carried out.

**5 Suspension or Termination of Services**

The Company shall be entitled to immediately and without liability either suspend or terminate provision of the services in the event of:

- (a) failure by the Client to comply with any of its obligations hereunder and such failure is not remedied within 10 days that notice of such failure has been notified to Client; or
- (b) any suspension of payment, arrangement with creditors, bankruptcy, insolvency, receivership or cessation of business by Client.

**6 Liability and Indemnification****(a) Limitation of Liability:**

- (1) The Company is neither an insurer nor a guarantor and disclaims all liability in such capacity. Clients seeking a guarantee against loss or damage should obtain appropriate insurance.
- (2) Reports of Findings are issued on the basis of information, documents and/or samples provided by, or on behalf of, Client and solely for the benefit of Client who is responsible for acting as it sees fit on the basis of such Reports of Findings. Neither the Company nor any of its officers, employees, agents or subcontractors shall be liable to Client nor any third party for any actions taken or not taken on the basis of such Reports of Findings nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to the Company.
- (3) The Company shall not be liable for any delayed, partial or total non-performance of the services arising directly or indirectly from any event outside the Company's control including failure by Client to comply with any of its obligations hereunder.
- (4) The liability of the Company in respect of any claim for loss, damage or expense of any nature and howsoever arising shall in no circumstances exceed a total aggregate sum equal to 10 times the amount of the fee paid in respect of the specific service which gives rise to such claim or US\$ 20,000 (or its equivalent in local currency), whichever is the lesser.
- (5) The Company shall have no liability for any indirect or consequential loss (including loss of profits).
- (6) In the event of any claim, Client must give written notice to the Company within 30 days of discovery of the facts alleged to justify such claim and, in any case, the Company shall be discharged from all liability for all claims for loss, damage or expense unless suit is brought within one year from:
  - (i) the date of performance by the Company of the service which gives rise to the claim; or
  - (ii) the date when the service should have been completed in the event of any alleged non-performance.
- (b) Indemnification: Client shall guarantee, hold harmless and indemnify the Company and its officers, employees, agents or subcontractors against all claims (actual or threatened) by any third party for loss, damage or expense of whatsoever nature including all legal expenses and related costs and howsoever arising relating to the performance, purported performance or non-performance, of any services.

**7 Miscellaneous**

- (a) If any one or more provisions of these General Conditions are found to be illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.
- (b) During the course of providing the services and for a period of one year thereafter Client shall not directly or indirectly entice, encourage or make any offer to Company's employees to leave their employment with the Company.
- (c) Use of the Company's corporate name or registered marks for advertising purposes is not permitted without the Company's prior written authorisation.

**8 Governing Law, Jurisdiction and Dispute Resolution**

All disputes arising from the provision of services hereunder shall, if:

- (a) provided by the Company to a Client both having their registered offices in the same country, be governed by and construed in accordance with the laws of such country and all disputes shall be submitted to the jurisdiction of the competent courts of such country.
- (b) provided by a U.S. Company to a U.S. Client, be governed by the substantive laws of the jurisdiction in which services are rendered exclusive of any rules with respect to conflicts of laws and all disputes shall be finally settled under the rules of commercial arbitration of the American Arbitration Association. Unless otherwise agreed, the arbitration shall take place in New York, New York with each party bearing its own costs. The arbitrators shall be required to provide a written opinion detailing the basis and rationale for their decision.
- (c) in all cases which do not fall within the provisions of (a) or (b) above and provided by the Company to a Client, be governed by the substantive laws of Switzerland exclusive of any rules with respect to conflicts of laws and all disputes shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with the said rules. Unless otherwise agreed, the arbitration shall take place in Geneva, Switzerland in English.

**9 Languages**

These General Conditions have been drafted in English and may be translated into other languages. In the event of any discrepancy, the English version shall prevail.