

Thermal Test Report

Model : YY-R423

Thermal Performance Contest

Date:Jan.05, 2005

THIS TEST REPORT IS PROVIDED "AS IS" WITH NO WARRANTY WHATSOEVER, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO THOSE FOR NON-INFRINGEMENT OF INTELLECTUAL PROPERTY, MERCHANTABILITY OR SATISFACTORY QUALITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY WARRANTY OTHERWISE ARISING OUT OF ANY PROPOSAL, SPECIFICATION OR SAMPLE.

YEONG YANG ASSUMES NO RESPONSIBILITY FOR ANY ERRORS WHICH MAY APPEAR IN THIS DOCUMENT

Table of Contents

1) Introduction.....	1
2) References.....	1
3) Thermal Test	1
1. Test Configuration.....	2
2. <u>Test Equipment Used.....</u>	<u>2</u>
3. Test Process	2
4. Data Recorded.....	2
5. Thermal Test Results.....	3
4) Summary/Recommendations	3
<u>Table 4.1 & 4.2 (Test Result & Sample Picture)</u>	

1. Introduction

The purpose of this evaluation is to find the best performance thermal solution by system operated as for Intel Xeon 3.4G processor .

2. References

ATX spec <http://formfactors.org>

3. Thermal Test

3.1 Test Configuration

Chassis	YY-R423
Power Supply	EMACS PSM-6600P 600W
Chassis Fan	Jamicon JF0625B1MS, Quantity:1 Speed:4000RPM (Middle Speed) Jamicon JF0625B1HS, Quantity:1 Speed:4500RPM (High Speed) Jamicon JF0825B1MS, Quantity:2 Speed:2500RPM (Middle Speed) Jamicon JF0825B1HS, Quantity:2 Speed:3000RPM (High Speed) <i>System config. To be tested with various modes, please refer to table 4.1 & 4.2</i>
Processor	Intel Xeon (Nocona 800Mhz FSB) 3.4GHz, Quantity:2
Processor Thermal solution	COOLERMMASTER E2U-N7RCS-04, Quantity:2
Motherboard	Tyan Tiger i7320 S5350
Memory	Apacer 512MB REG ECC PC2100, Quantity: 2
Hard Drive	SEAGATE 40G, Quantity: 1
CD ROM	Cyber CD526D 52X, Quantity: 1
Floppy Drive	Mitsumi D359M3, Quantity: 1
PCI-Lan Card	D-LINK DFE-530TX, Quantity: 1
PCI-Sound Card	ESS SC1938, Quantity: 1

3.2 Test Equipment Used

FULL SYSTEM OPERATION

Fluke Hydra 2635A

Software: Intel Nacona/Irwindale MAXPOWER Rev:2.0(100%)

3.3 Test Process

The peripherals listed in section 1 were installed in the chassis and thermocouples were attached at the points designated in section 4. The chassis was tested in a controlled temperature held at a constant 35°C. The thermal readings communicated from the sensors on the test board to the test software. The system was exercised until the initial thermal gradient reached a consistent level with a slope-nearing zero. During testing, the ambient temperature was monitored approximately 2" from the front bezel of the chassis.

3.4 Data Recorded

Temperature readings are measured at the following location(s):

- Ambient -- Hotbox ambient temperature (2" from the front center of the chassis)
- Tinlet1 – Internal ambient temperature of the processor heatsink .5" away from the center of fan hub (near the rear port)
- Tinlet2 – Internal ambient temperature of the processor heatsink .5" away from the center of fan hub (near the PSU)
- Tinlet3 – Internal ambient temperature of the processor heatsink .5" away from the center of fan hub (near the DIMM slot)
- Tinlet4 – Internal ambient temperature of the processor heatsink .5" away from the center of fan hub (near the chipset)
- Tcase -- Processor case temperature

4. Test Result (see table 4.1), & Test mode details (Table 4.2)

Summary: PASS

According to the FMB guidance, the CPU is FMB04B, TDP=103W

Psc Tc= Px0.28+43 =71.84 °C (Tc spec)

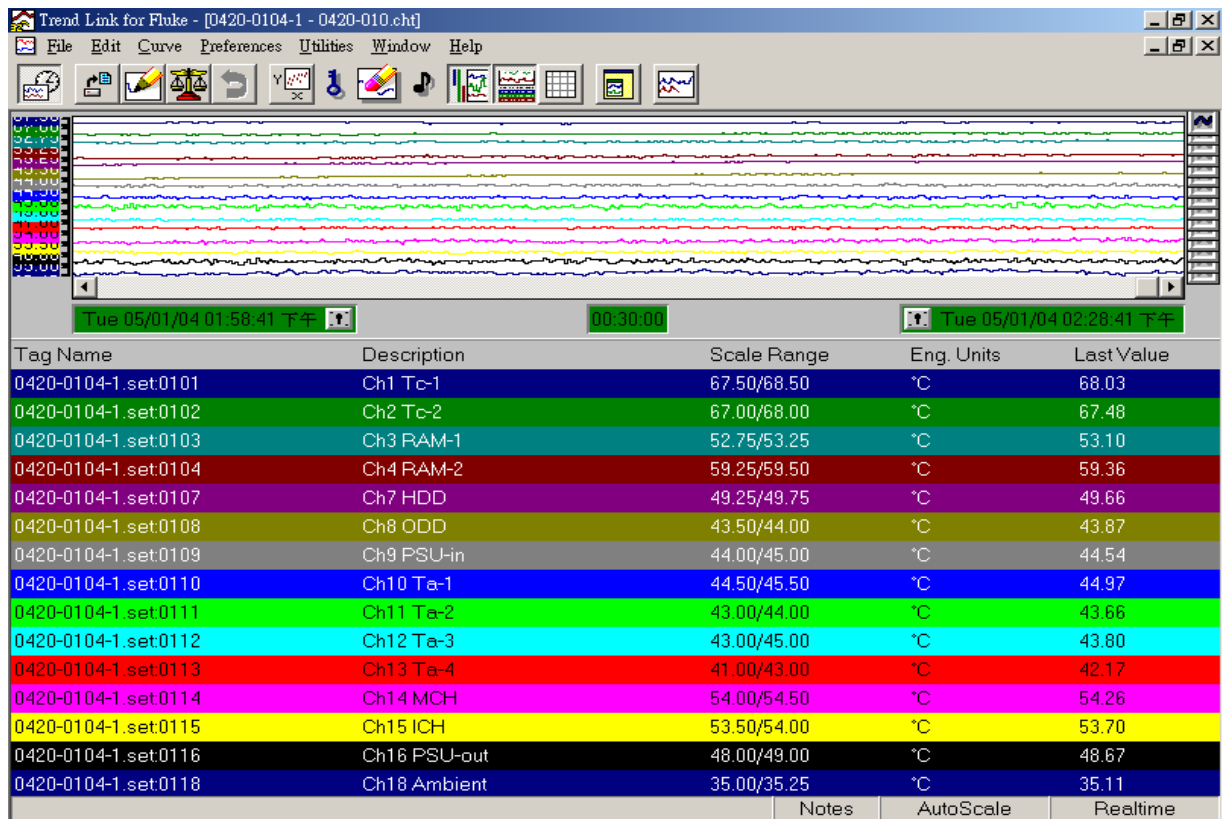
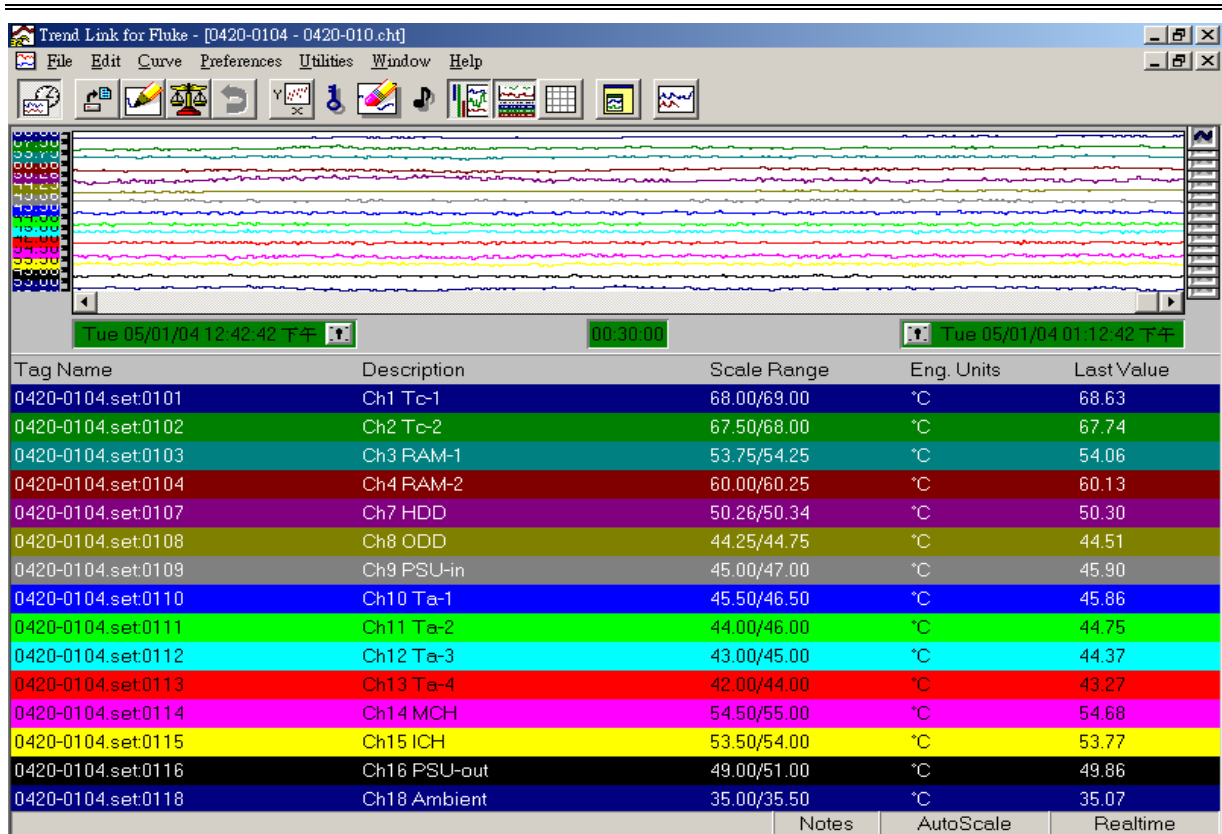
1.在加入了兩顆 8 公分風扇的對策後(Mode 5 & 6 compare),其 Tc 值的差異(Mode 4 & 6 compare)僅在不到 2 度 C 左右的改善,因此在後方加入兩顆 8 公分風扇的對策,似乎沒有改善的必要.

Yeong Yang Technology, Engineering Validation

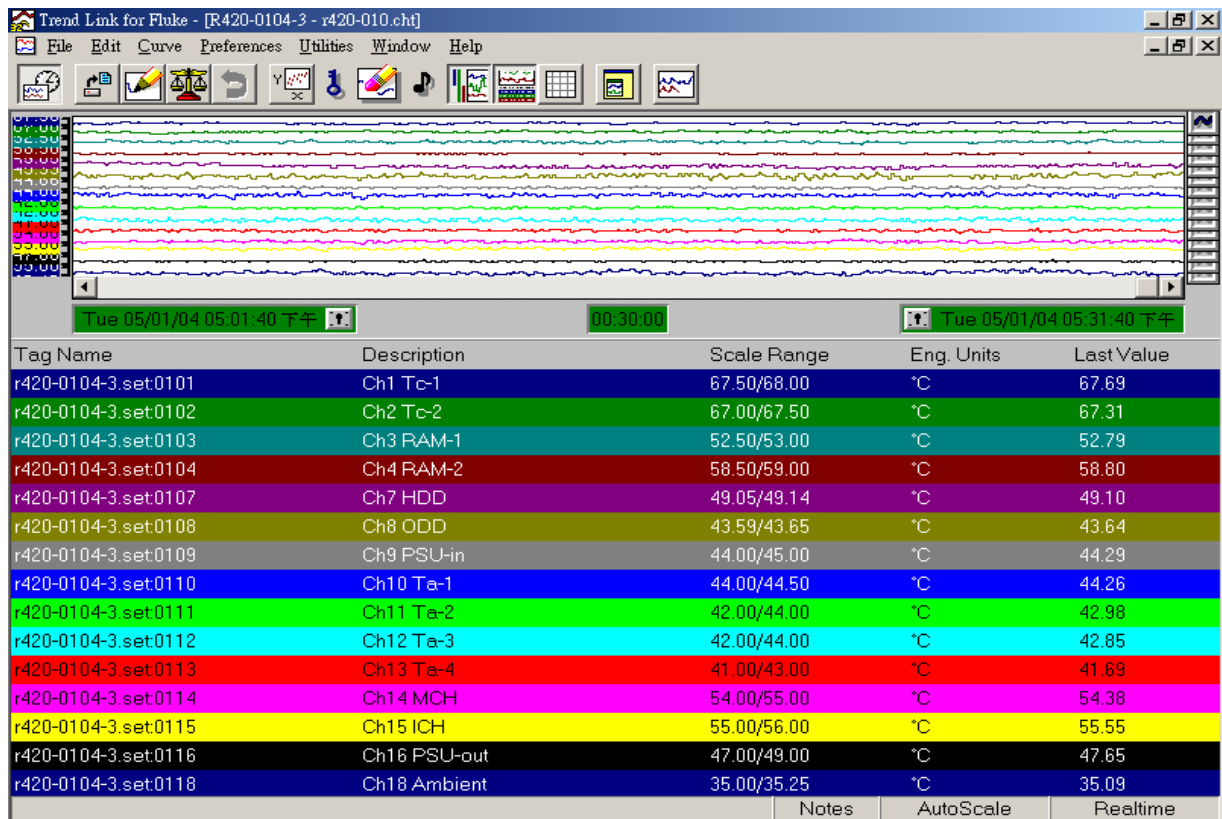
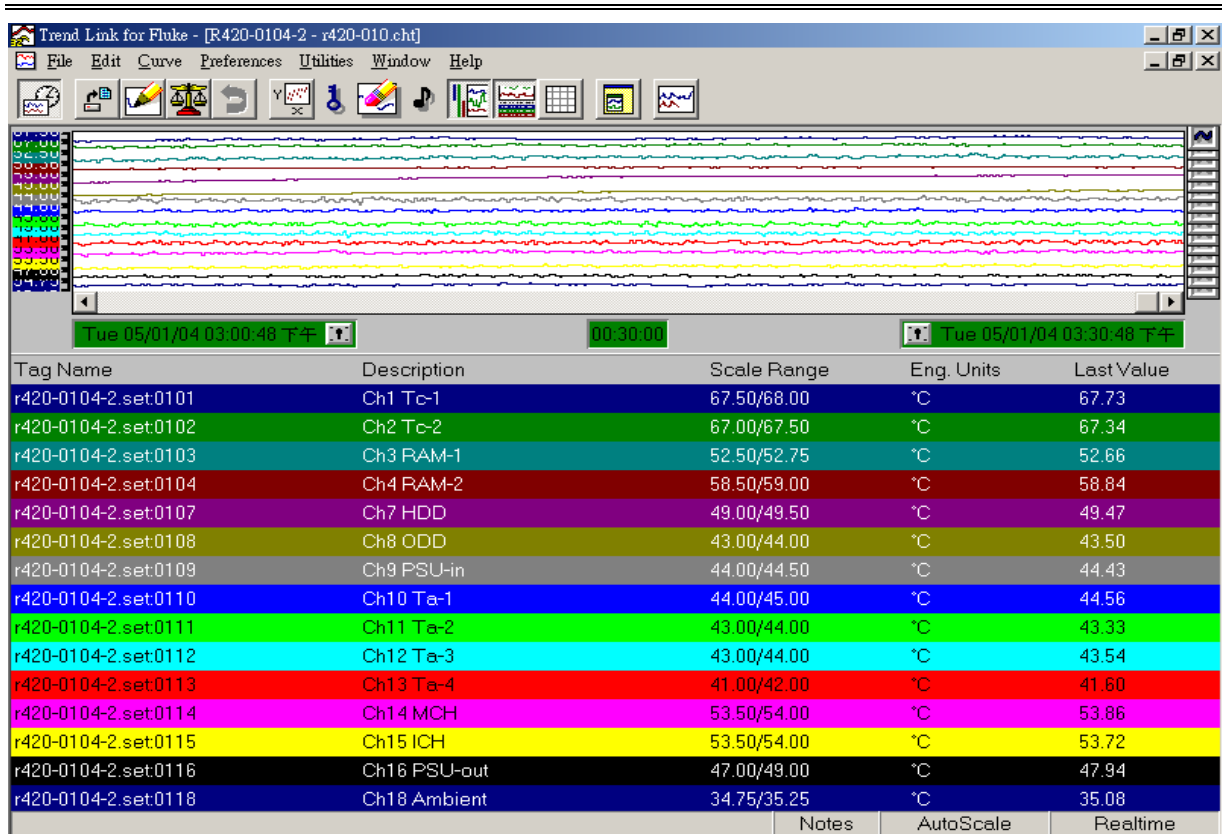
Table 4.1
Date: Jan.05.2005

Mode Introductions	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6
Power Model	EMACS PSM-6600P (with 8cm Fan for airflow out, vents for air flow out)					
System Fan- 9 cm *2 Mounted in Front side of chassis	Yes-Middle Speed	Yes-Middle Speed	Yes-Middle Speed	Yes-High Speed	Yes-High Speed	Yes-High Speed
System Fan- 6 cm *1 Mounted in Rear side of chassis	No	Yes-Middle Speed	Yes-High Speed	Yes-High Speed	No	No
System Fan- 8 cm *2 Mounted in Rear side of chassis	No	No	No	No	Yes-Middle Speed	Yes-High Speed
Run the test under the software on 100% level	100%	100%	100%	100%	100%	100%
Test Result (values was according to the screens of Fluke monitor)						
DIMM-1	54.1	53.1	52.7	52.8	50.2	50
DIMM-2	60.1	59.4	58.8	58.8	56.4	55.6
HDD	50.3	49.7	49.5	49.1	45	44.4
CDROM	44.5	43.9	43.5	43.6	39.7	39.3
MCH	54.7	54.3	53.9	54.4	55.3	55.2
ICH	53.8	53.7	53.7	55.6	54.7	54.6
POWER-in	45.9	44.5	44.4	44.3	40.3	40
POWER-out	49.9	48.7	47.9	47.7	46.2	45.8
T-inlet 1	45.9	45	44.6	44.3	41.8	42.2
T-inlet 2	44.8	43.7	43.3	43	41.6	41
T-inlets average Tambient(1~2)	<u>45.4</u>	<u>44.4</u>	<u>44</u>	<u>43.7</u>	<u>41.7</u>	<u>41.6</u>
T-case-1	<u>68.6</u>	<u>68</u>	<u>67.7</u>	<u>67.7</u>	<u>66.5</u>	<u>65.9</u>
T-inlet 3	44.4	43.8	43.5	42.9	39.8	39.9
T-inlet 4	43.3	42.2	41.6	41.7	41.7	41.9
T-inlets average Tambient(3~4)	<u>43.9</u>	<u>43</u>	<u>42.6</u>	<u>42.3</u>	<u>40.8</u>	<u>40.9</u>
T-case-2	<u>67.7</u>	<u>67.5</u>	<u>67.3</u>	<u>67.3</u>	<u>66.7</u>	<u>66.5</u>
Ambient(case outside)	35.1	35.1	35.1	35.1	35.1	35.1

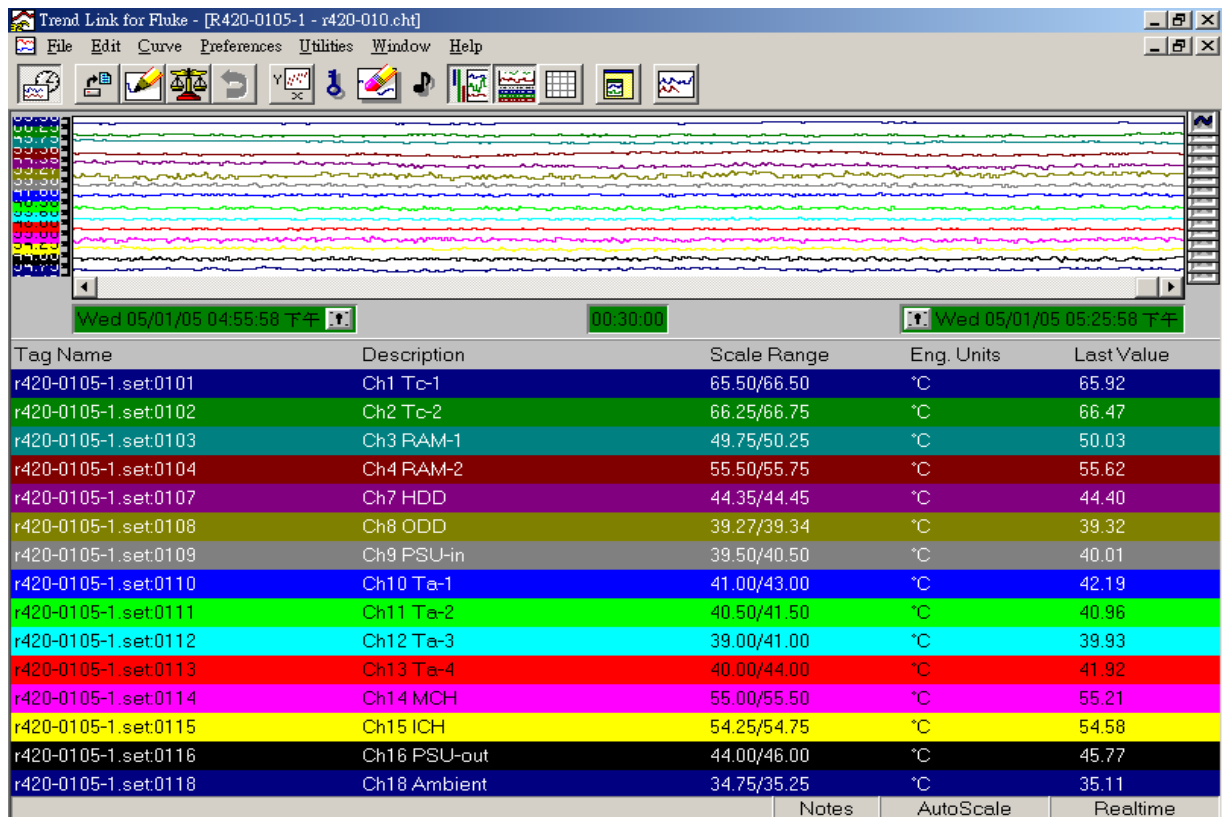
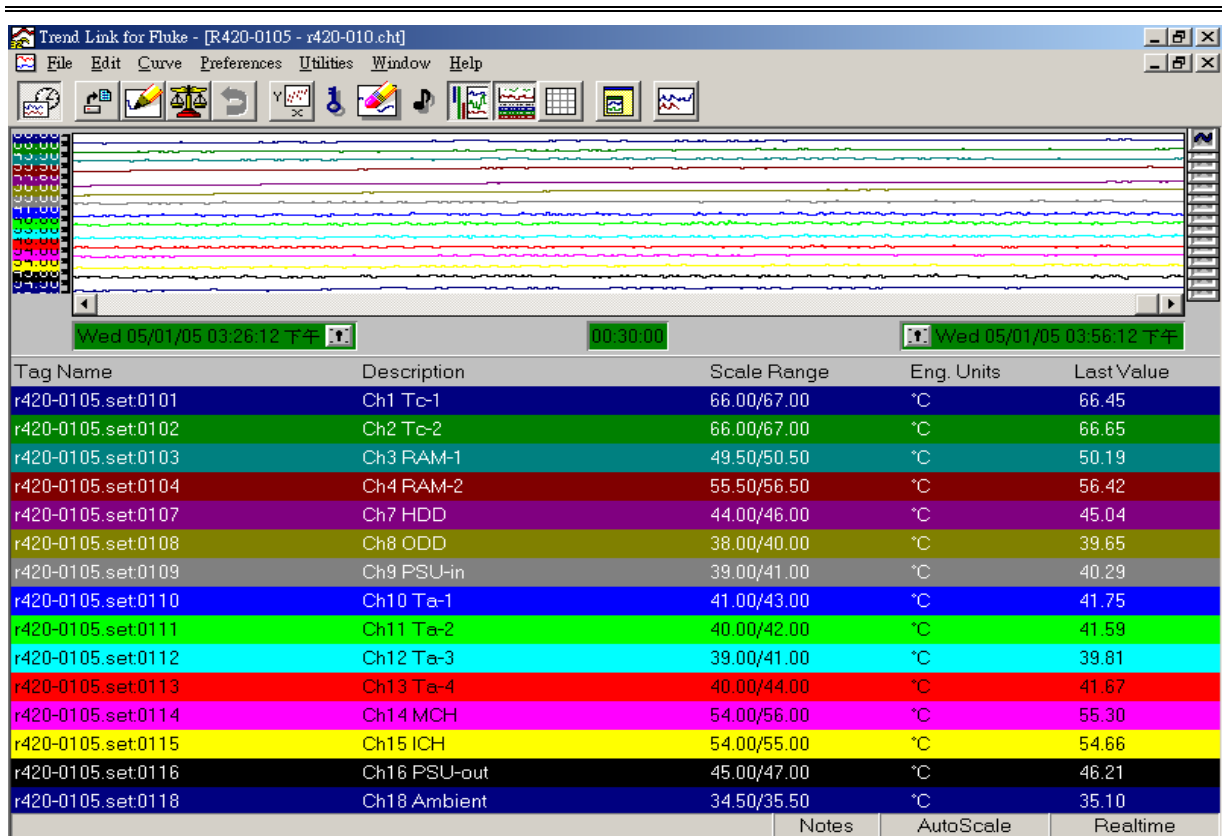
Yeong Yang Technology, Engineering Validation



Yeong Yang Technology, Engineering Validation



Yeong Yang Technology, Engineering Validation



Yeong Yang Technology, Engineering Validation

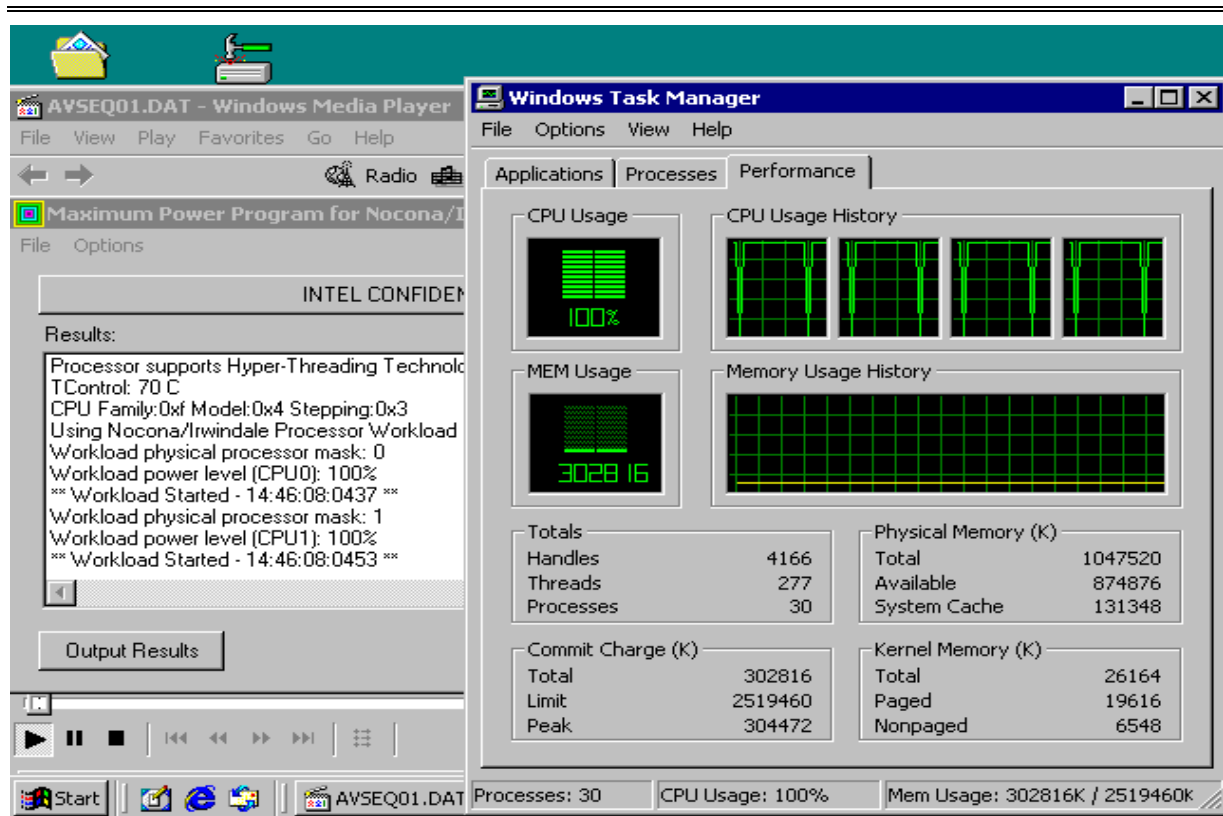


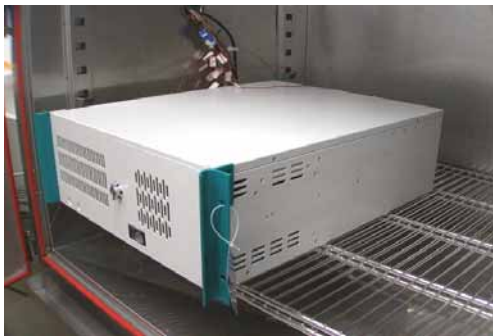
Table 4.2



The view of the chassis front side-1.



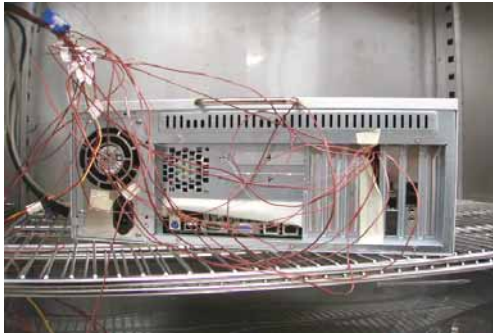
The view of chassis front side-2 side.



The view of the chassis right side.



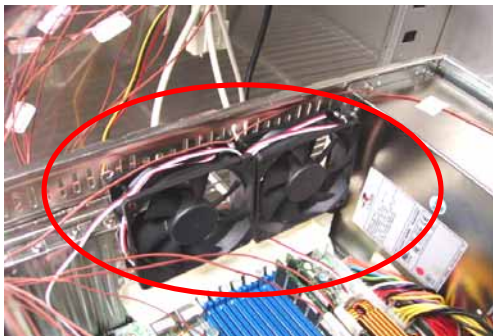
The view of the chassis left side.



The view of the chassis back side.



The view of the thermocouples connections.



The view of the add 8cm fan*2 (Mode 5&6).