

# Thermal Test Report

## Model : YY-0221

### Thermal Performance Contest

Date:Aug.03, 2004

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## 1. Introduction

The purpose of this evaluation is to find the best performance thermal solution by system operated as for Intel Xeon 3.2G processor .

## 2. References

ATX spec <http://formfactors.org>

### 3. Thermal Test

#### 3.1 Test Configuration

Chassis	YY-0221
Power Supply	EMACS PSM-6600P 600W
Chassis Fan	<b>Jamicon KF1225B1HS, Quantity:1</b> Speed:2200RPM (High Speed) <b>TOP DF1209BB , Quantity:1</b> Speed:2600RPM (Middle Speed) <b>Jamicon JF0925B1MS, Quantity:2</b> Speed:2500RPM (Middle Speed) <b>Jamicon JF0825B1HS, Quantity:2</b> Speed:3000RPM (Middle Speed) <i>System config. To be tested with various modes, please refer to table 4.1 &amp; 4.2</i>
Processor	Intel Xeon (Nocona 800Mhz FSB) 3.2GHz, Quantity:2
Processor Thermal solution	Intel Boxed Heatsink, Quantity:2 Thermaltake Intel Xeon 2U Active Solution P/N:A1964, Quantity:2
Motherboard	ASUS NCCH-DL
Memory	Kingston DDR400 512MB, Quantity: 2
Hard Drive	SEAGATE 40G, Quantity: 1
SCSI Drive	SEAGATE ST39102LC 8G, Quantity: 3
CD ROM	Cyber CD526D 52X, Quantity: 1
Floppy Drive	Mitsumi D359M3, Quantity: 1
AGP Card	Albatron FX5200, Quantity: 1
SCSI Card	Adaptec 39320D Ultra 320 , Quantity: 1

#### 3.2 Test Equipment Used

FULL SYSTEM OPERATION

Fluke Hydra 2635A

Software: 1. Intel Nacona MAXPOWER (100%)  
2. Winthrax

#### 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)**

**5. Summary: PASS, The chassis could pass test after changing the chassis' mechanical as available for assembly two 8cm fans in the rear end. As well as adding Air Guide on the side cover, or to install systems fan as in-line air flow from front to rear end. The further engineering change on the chassis must be carried out.**

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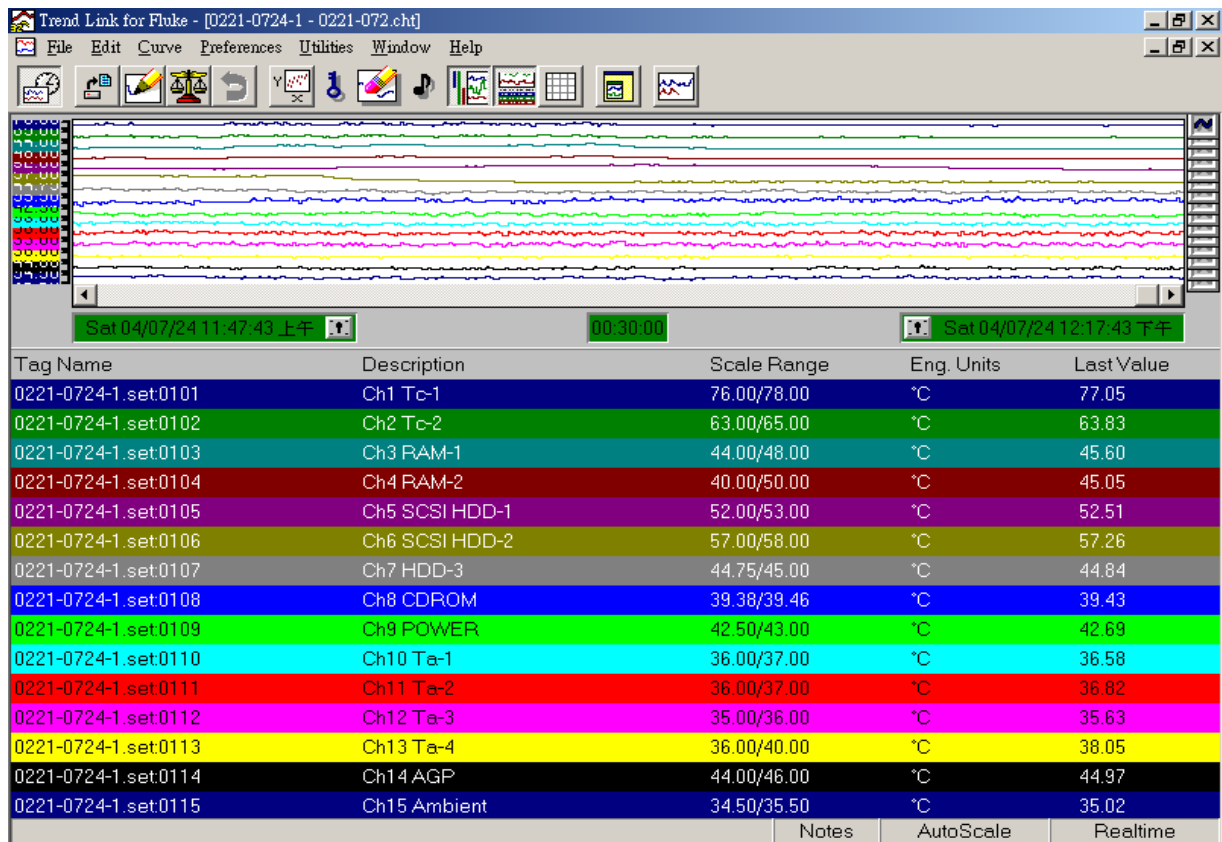
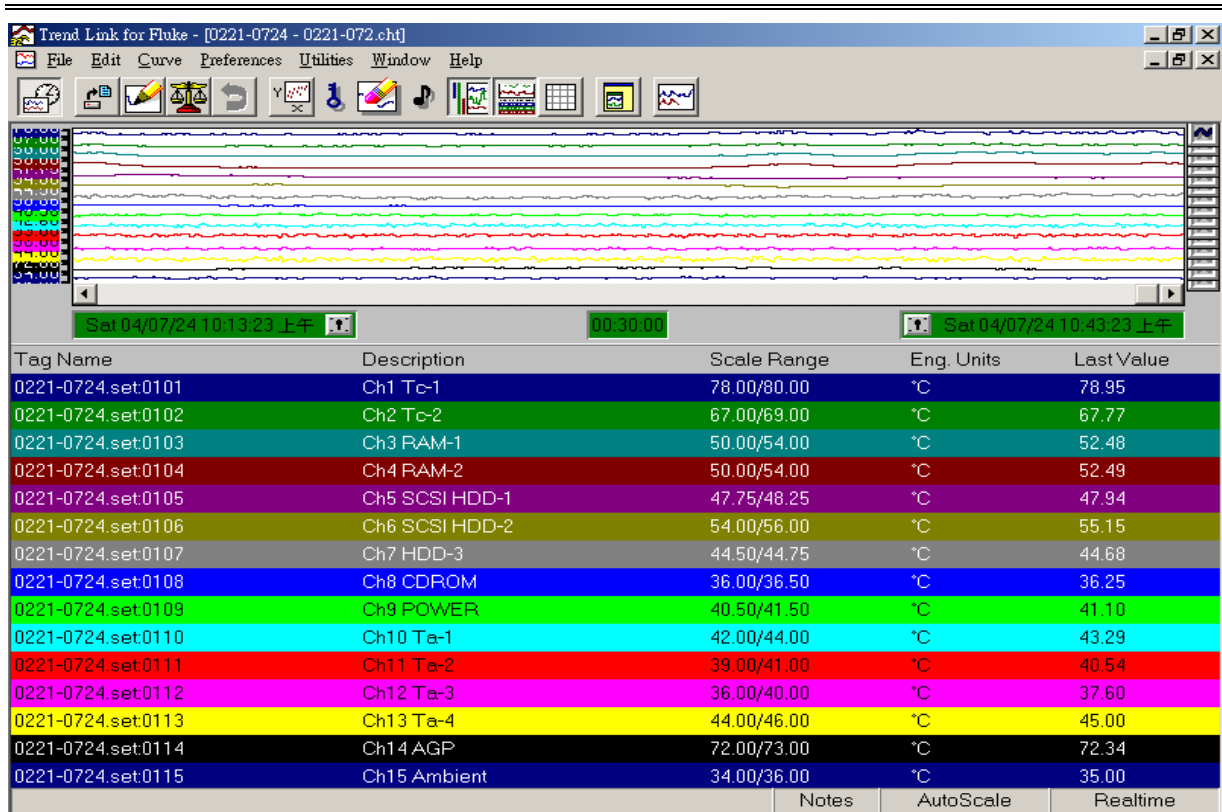
Table 4.1  
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Mode Introductions	Mode 1	Mode 2	Mode 3
<b>Power Model</b>	EMACS PSM-6600P (with 8cm Fan for airflow out, vents for air flow out)		
<b>System Fan- 12 cm *1 Mounted in front side of chassis</b>	<b>Yes Airflow out</b>	<b>Yes Airflow out</b>	<b>Yes Airflow out</b>
<b>System Fan- 9 cm *2 Mounted in the side cover (CPU area)</b>	No No air guide	<b>Yes Airflow in</b>	<b>No With Airguide</b>
<b>System Fan- 8 cm *2 (Mounted in Rear side of chassis)</b>	<b>Yes Airflow out</b>	<b>Yes Airflow out</b>	<b>Yes Airflow out</b>
<b>Processor Thermal solution</b>	<b>Intel Boxed Heatsink</b>		
<b>Run the test under the software on 100% level</b>	100%	100%	100%
<b>Test Result (values was according to the screens of Fluke monitor)</b>			
DIMM-1	52.5	45.6	47.7
DIMM-2	52.5	45.1	47.7
SCSI HDD-1	47.9	52.5	48.6
SCSI HDD-2	55.2	57.3	55.5
HDD-3	44.7	44.8	44.7
CD ROM	36.3	39.4	36.5
POWER	41.1	42.7	41.5
AGP Card	72.3	45	69.7
T-inlet 1	43.3	36.6	37.1
T-inlet 2	40.5	36.8	36.9
<b>T-inlets average Tambient(1~2)</b>	<b><u>41.9</u></b>	<b><u>36.7</u></b>	<b><u>37</u></b>
<b>T-case-1</b>	<b><u>79</u></b>	<b><u>77.1</u></b>	<b><u>78.4</u></b>
T-inlet 3	37.6	35.6	36.5
T-inlet 4	45	38.1	40.9
<b>T-inlets average Tambient(3~4)</b>	<b><u>41.3</u></b>	<b><u>36.9</u></b>	<b><u>38.7</u></b>
<b>T-case-2</b>	<b><u>67.8</u></b>	<b><u>63.8</u></b>	<b><u>65.6</u></b>
Ambient(case outside)	<b><u>35</u></b>	<b><u>35</u></b>	<b><u>35</u></b>

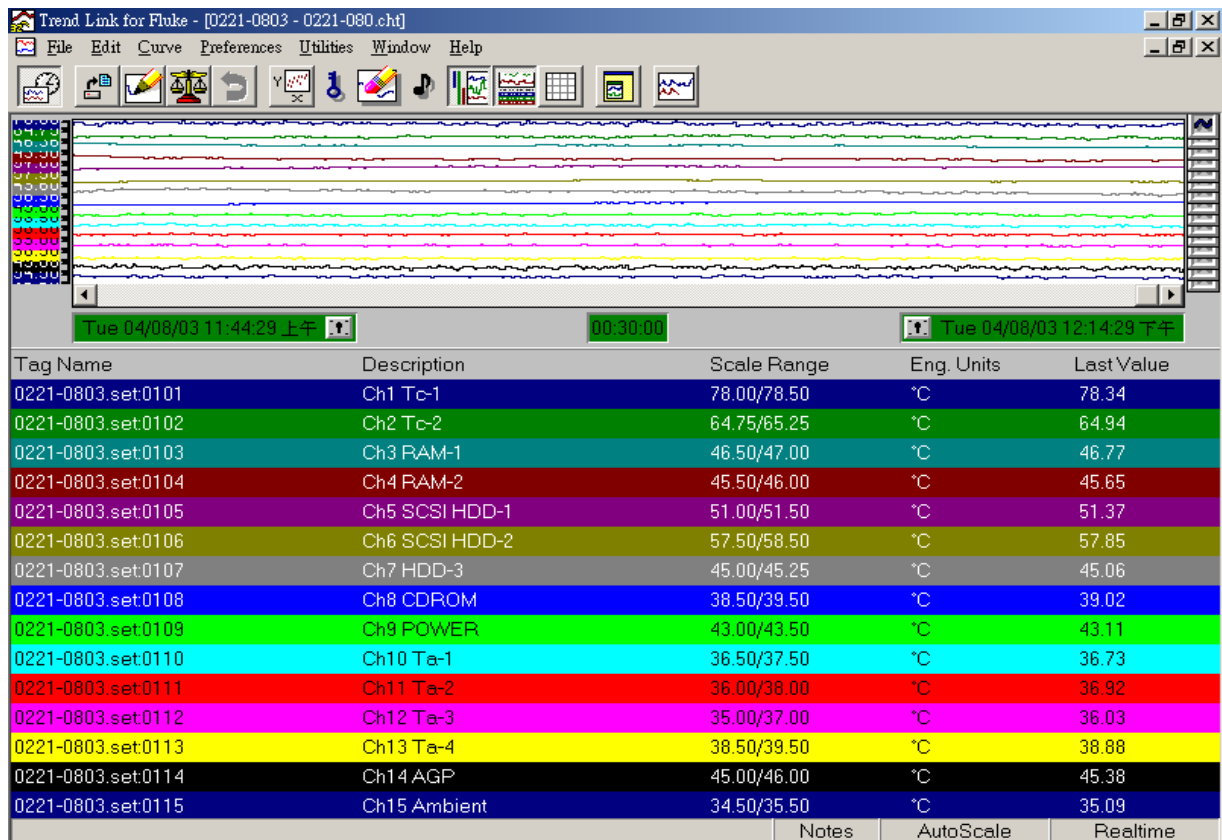
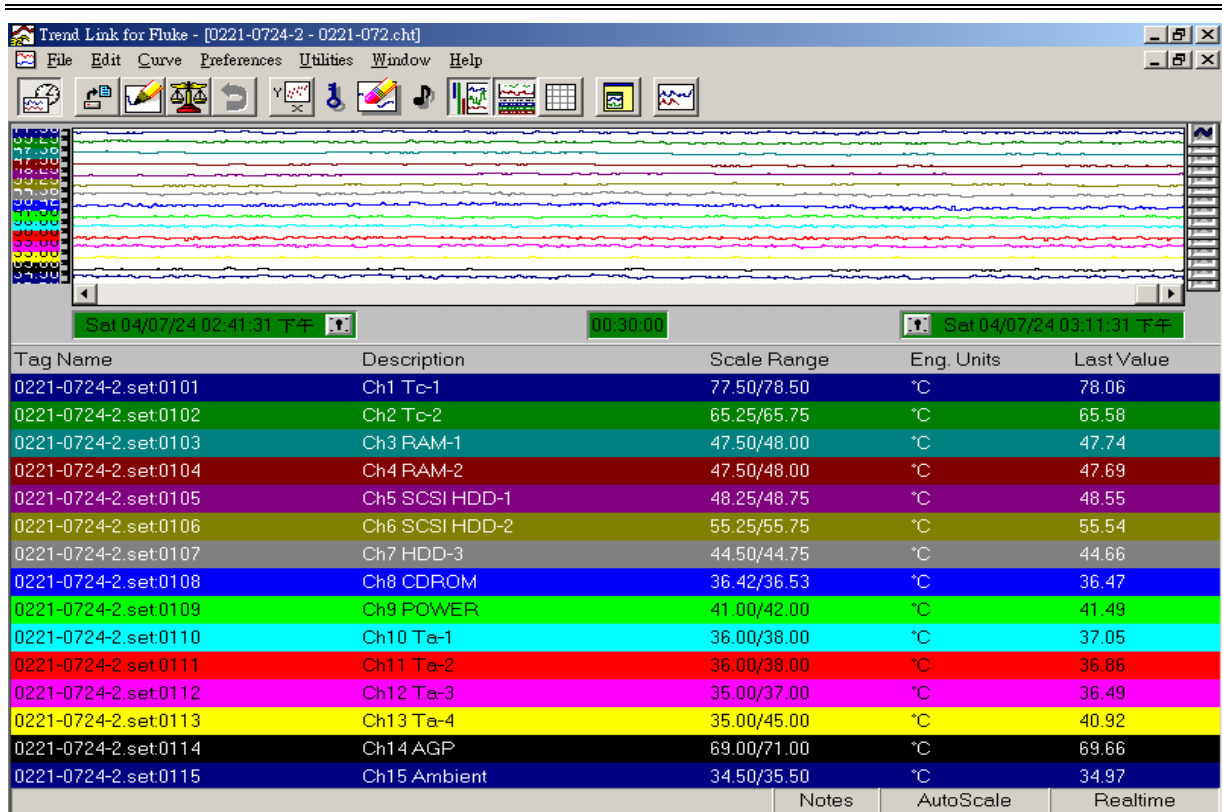
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Mode Introductions	Mode 4	Mode 5	Mode 6
<b>Power Model</b>	EMACS PSM-6600P (with 8cm Fan for airflow out, vents for air flow out)		
<b>System Fan- 12 cm *1 (Mounted in front side of chassis)</b>	<b>Yes Airflow out</b>	<b>Yes Airflow in</b>	<b>Yes Airflow in</b>
<b>System Fan- 9 cm *2 Mounted in side cover(CPU area)</b>	<b>Yes Airflow in</b>	<b>Yes Airflow in</b>	No
<b>System Fan- 8 cm *2 (Mounted in Rear side of chassis)</b>	<b>Yes Airflow out</b>	<b>Yes Airflow out</b>	<b>Yes Airflow out</b>
<b>Processor Thermal solution</b>	<b>Thermaltake Intel Xeon 2U Active Solution P/N:A1964</b>		
<b>Run the test under the software on 100% level</b>	100%	100%	100%
<b>Test Result (values was according to the screens of Fluke monitor)</b>			
DIMM-1	46.8	46.2	48.3
DIMM-2	45.7	44.6	47.1
SCSI HDD-1	51.4	50.9	48.5
SCSI HDD-2	57.9	56.7	55.3
HDD-3	45.1	45.6	44.4
CD ROM	39	39.1	36.5
POWER	43.1	42.7	41.2
AGP Card	45.4	46.1	74.2
T-inlet 1	36.7	36.8	37.5
T-inlet 2	36.9	36.2	38.5
<b>T-inlets average Tambient(1~2)</b>	<b><u>37.8</u></b>	<b><u>36.5</u></b>	<b><u>38</u></b>
<b>T-case-1</b>	<b><u>78.3</u></b>	<b><u>78.2</u></b>	<b><u>79.1</u></b>
T-inlet 3	36	35.4	36.9
T-inlet 4	38.9	38.8	43.1
<b>T-inlets average Tambient(3~4)</b>	<b><u>37.5</u></b>	<b><u>37.1</u></b>	<b><u>40</u></b>
<b>T-case-2</b>	<b><u>64.9</u></b>	<b><u>64.8</u></b>	<b><u>67.1</u></b>
Ambient(case outside)	<b><u>35.1</u></b>	<b><u>35</u></b>	<b><u>35.1</u></b>

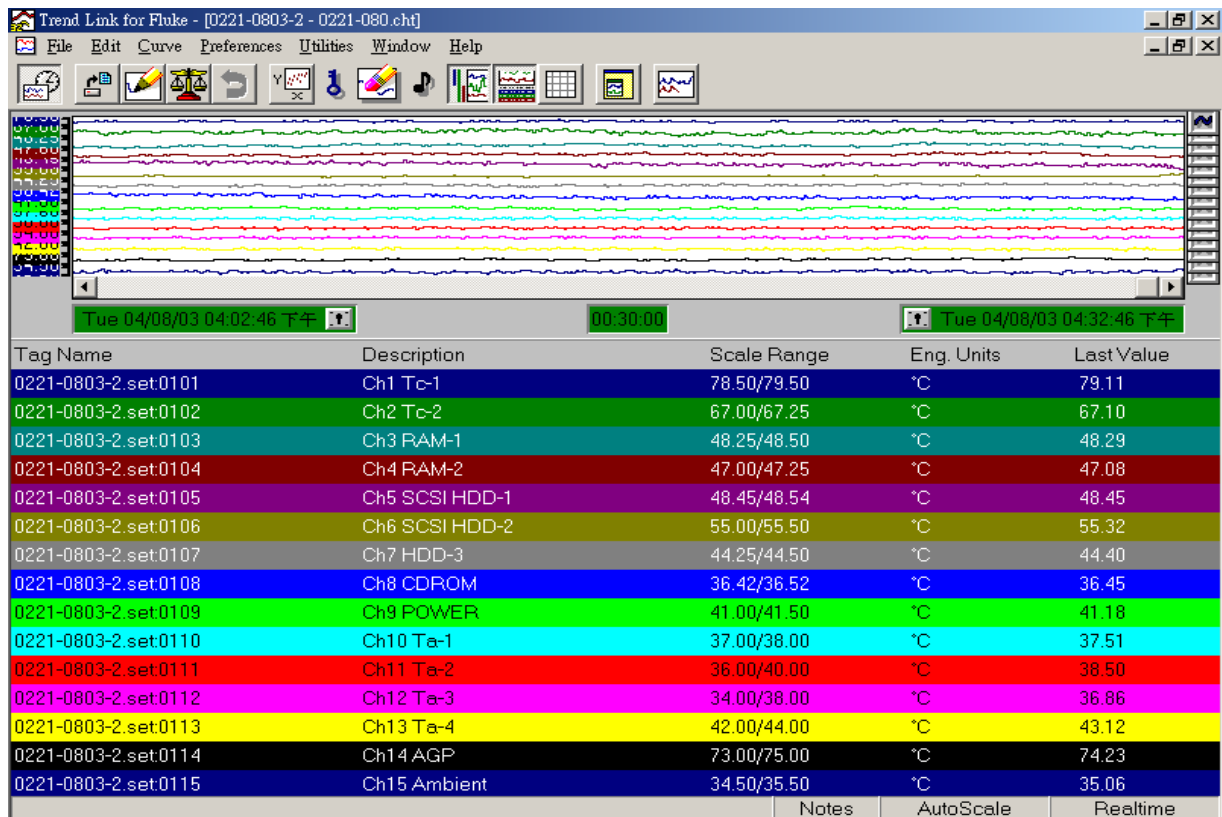
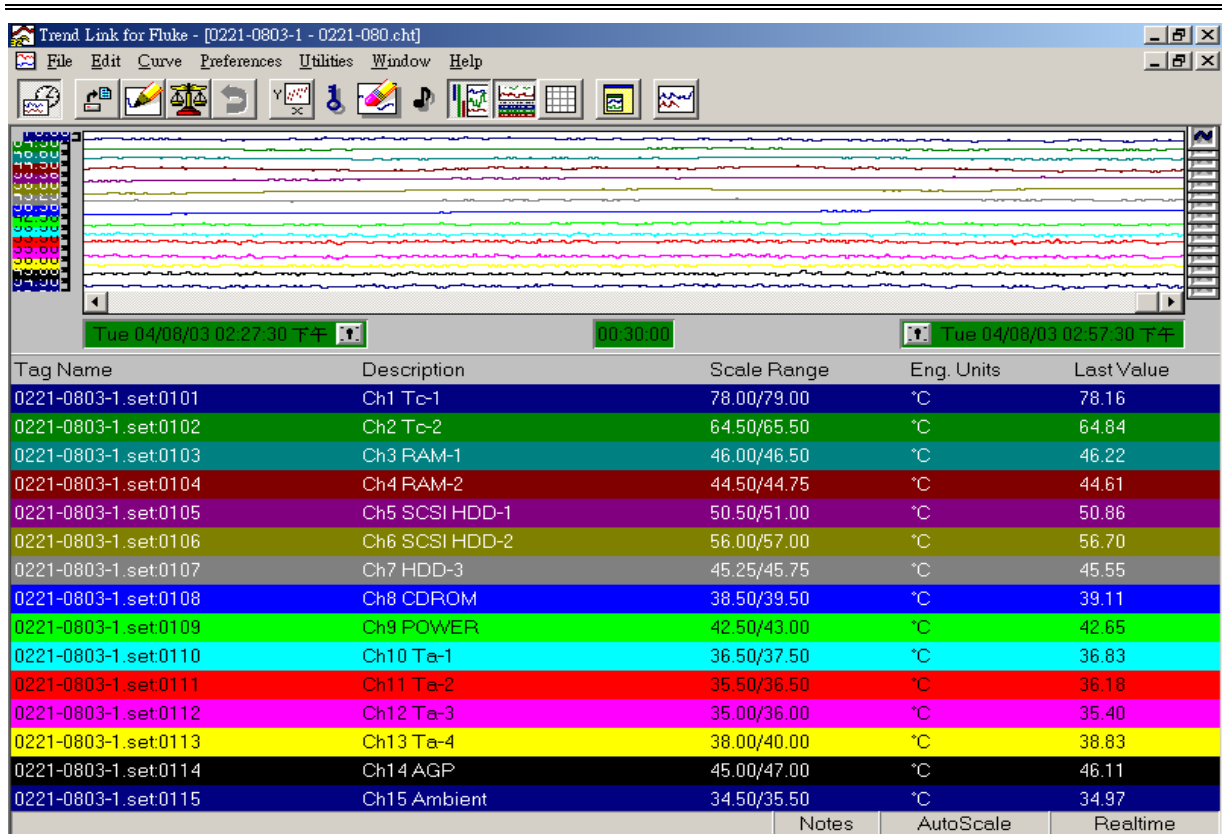
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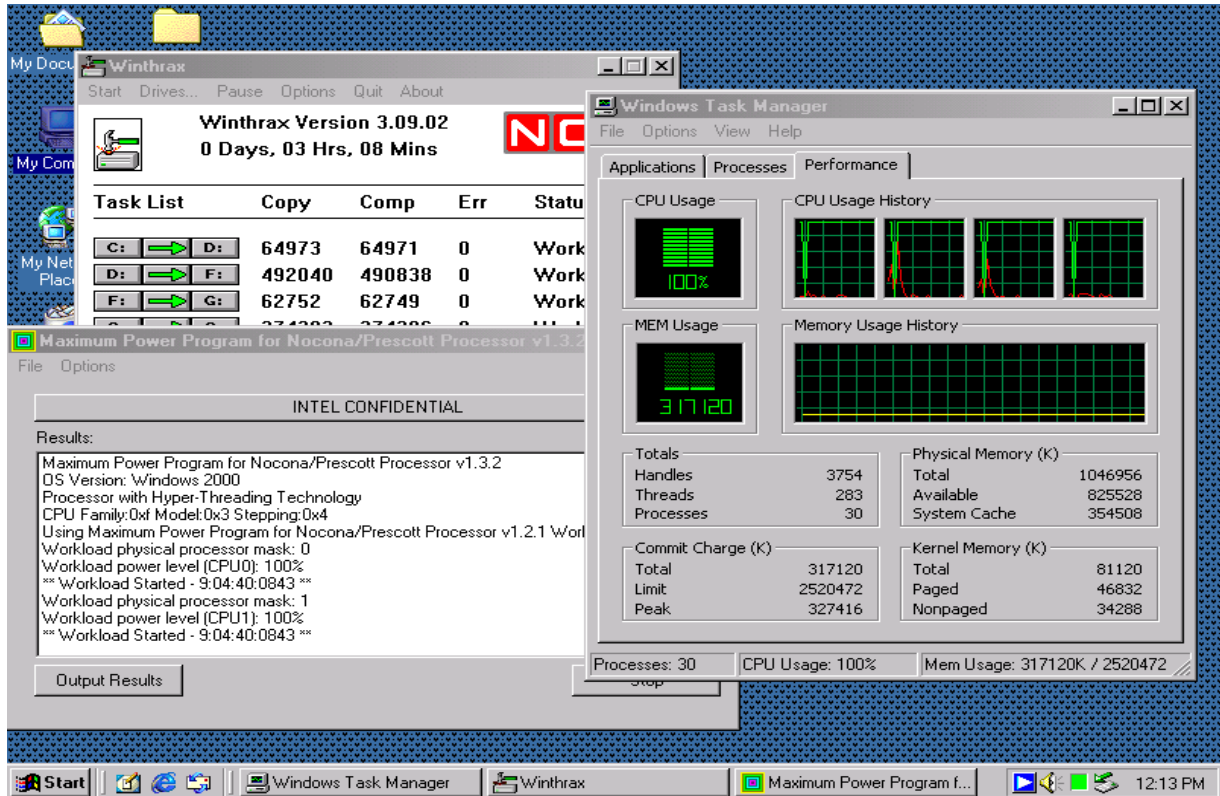


Table 4.2



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.



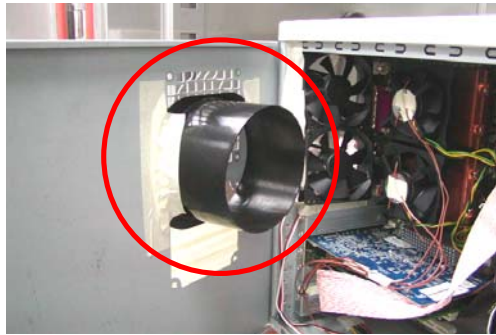
The view of the thermocouples connections.



The view of system setup(HDD,SCSI HDD,CDROM,FDD,POWER).



The view of system 9 cm Fan\*2(Airflow in).



The view of Airguide.