

# Thermal Test Report

## Model : YY-0420

### Thermal Performance Contest

Date:Aug.16, 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-0420
Power Supply	EMACS PSM-6600P 600W
Chassis Fan	<b>Jamicon JF0825B1HS, Quantity:2</b> Speed:3000RPM (High Speed) <b>TOP DF1209BB , Quantity:1</b> Speed:2600RPM (Middle Speed) <b>Jamicon KF1225B1H-00, Quantity:3</b> Speed:2200RPM (High Speed) <b>Jamicon JF1238B1H, Quantity:2</b> Speed:2800RPM (High 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 Rev.1.02
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 adding Air Guide on the side cover. The further engineering change on the chassis must be carried out.**

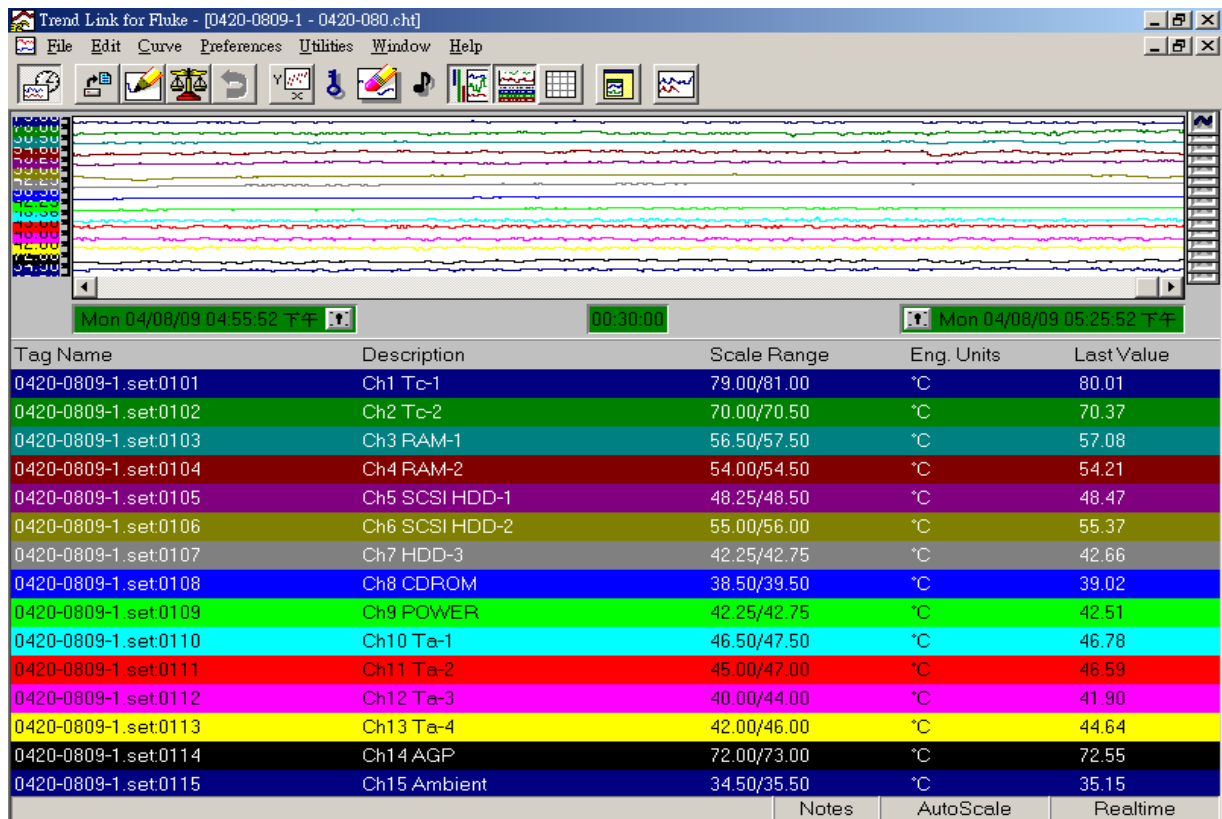
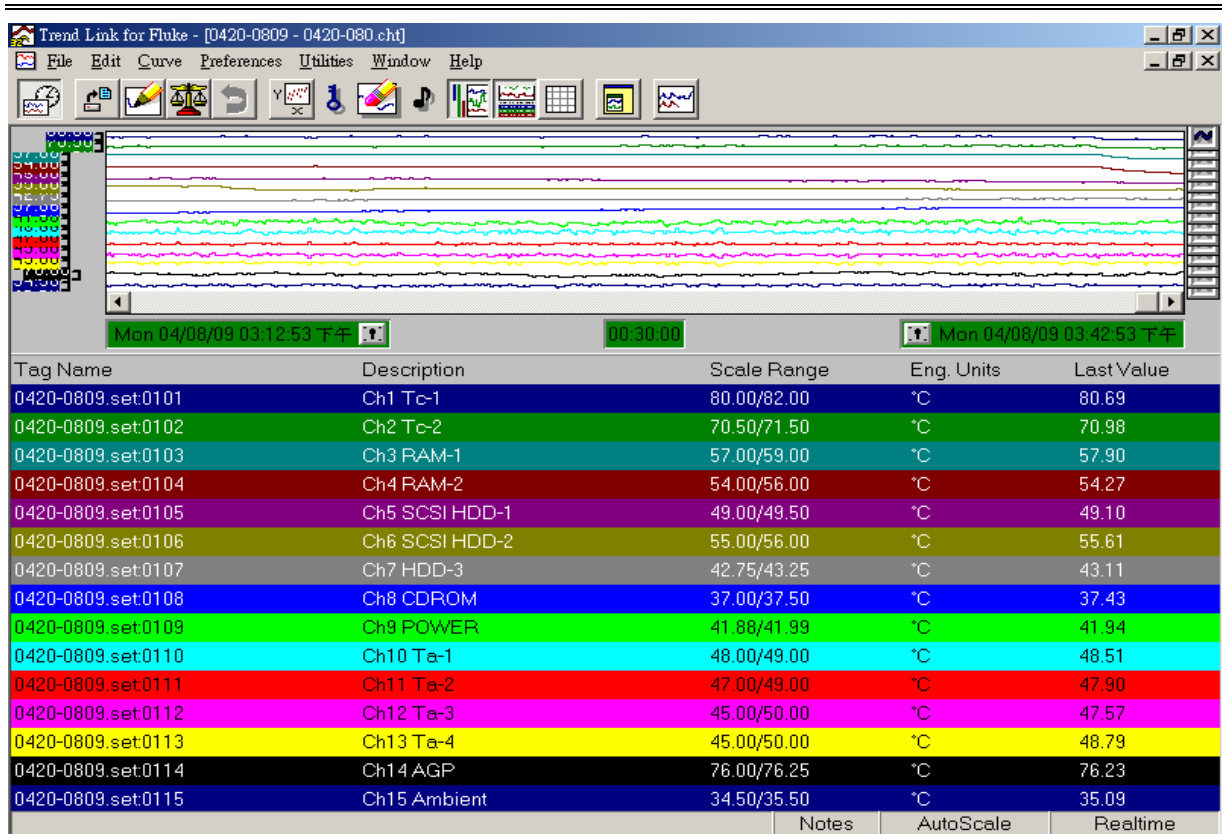
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Table 4.1  
Date: Aug.16.2004

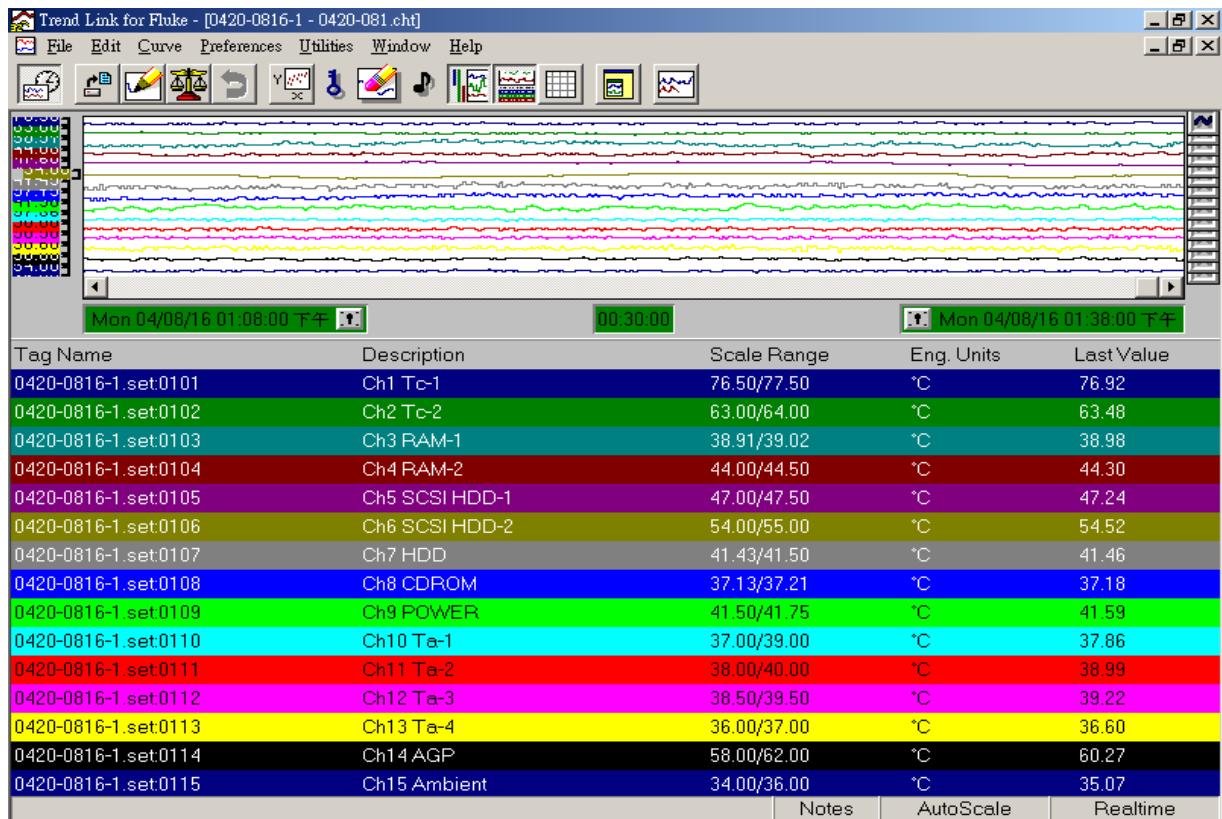
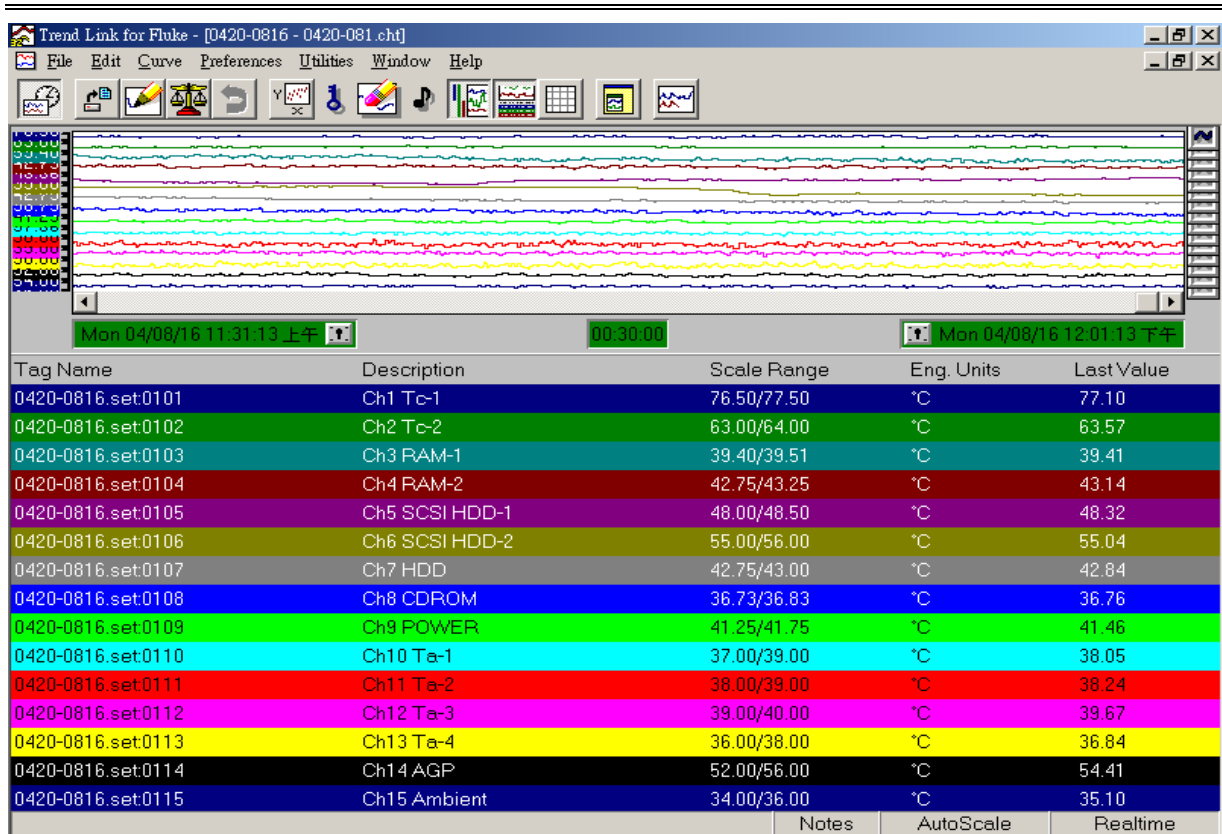
Mode Introductions	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6
System Fan- 12 cm *2 (Mounted in front side of chassis)	Yes Airflow in	Yes Airflow in 1238mm	Yes Airflow in	Yes Airflow in 1238mm	Yes Airflow out 1238mm	No
(Mounted in Rear side of chassis)	9 cm Fan*1 Airflow out	9 cm Fan*1 Airflow out	8 cm Fan*2 Airflow out	8 cm Fan*2 Airflow out	8 cm Fan*2 Airflow out	8 cm Fan*2 Airflow out
Airguide CAG1.1	No	No	Yes	Yes	Yes	Yes
Run the test under the software on 100% level	100%	100%	100%	100%	100%	100%
<b>Test Result (values was according to the screens of Fluke monitor)</b>						
DIMM-1	57.9	57.1	39.4	39	38.8	40.4
DIMM-2	54.3	54.2	43.1	44.3	44.6	46.4
SCSI HDD-1	49.1	48.5	48.3	47.2	51.7	49.8
SCSI HDD-2	55.6	55.4	55	54.5	57.2	58.2
HDD-3	43.1	42.7	42.8	41.5	42	44.2
CD ROM	37.4	39	36.8	37.2	37.4	36.7
POWER	41.9	42.5	41.5	41.6	42.1	41.7
AGP Card	76.2	72.6	54.4	60.3	46.3	53.1
T-inlet 1	48.5	46.8	38.1	37.9	36	38.1
T-inlet 2	47.9	46.9	38.2	39	37.3	38
<b>T-inlets average Tambient(1~2)</b>	<b><u>48.2</u></b>	<b><u>46.7</u></b>	<b><u>38.2</u></b>	<b><u>38.5</u></b>	<b><u>36.7</u></b>	<b><u>38.1</u></b>
<b>T-case-1</b>	<b><u>80.7</u></b>	<b><u>80</u></b>	<b><u>77.1</u></b>	<b><u>76.9</u></b>	<b><u>76.9</u></b>	<b><u>77.4</u></b>
T-inlet 3	47.6	41.9	39.7	39.2	40.6	39.9
T-inlet 4	48.8	44.6	36.8	36.6	36.2	36.8
<b>T-inlets average Tambient(3~4)</b>	<b><u>48.2</u></b>	<b><u>43.3</u></b>	<b><u>38.3</u></b>	<b><u>37.9</u></b>	<b><u>38.4</u></b>	<b><u>38.4</u></b>
<b>T-case-2</b>	<b><u>71</u></b>	<b><u>70.4</u></b>	<b><u>63.6</u></b>	<b><u>63.5</u></b>	<b><u>62.6</u></b>	<b><u>63.4</u></b>
Ambient(case outside)	<b><u>35.1</u></b>	<b><u>35.2</u></b>	<b><u>35.1</u></b>	<b><u>35.1</u></b>	<b><u>35.1</u></b>	<b><u>35.2</u></b>

Mode Introductions	Mode 7
System Fan- 12 cm *2 (Mounted in front side of chassis)	Yes Airflow out 1238mm
(Mounted in Rear side of chassis)	9 cm Fan*1 Airflow out
Airguide CAG1.1	Yes
Run the test under the software on 100% level	100%
<b>Test Result (values was according to the screens of Fluke monitor)</b>	
DIMM-1	46.4
DIMM-2	45.6
SCSI HDD-1	51.8
SCSI HDD-2	58
HDD-3	42.6
CD ROM	38.1
POWER	42.3
AGP Card	48
T-inlet 1	37.3
T-inlet 2	37.6
<b>T-inlets average Tambient(1~2)</b>	<b><u>37.5</u></b>
<b>T-case-1</b>	<b><u>77.6</u></b>
T-inlet 3	41.5
T-inlet 4	37.5
<b>T-inlets average Tambient(3~4)</b>	<b><u>39.5</u></b>
<b>T-case-2</b>	<b><u>62.3</u></b>
Ambient(case outside)	<b><u>35.4</u></b>

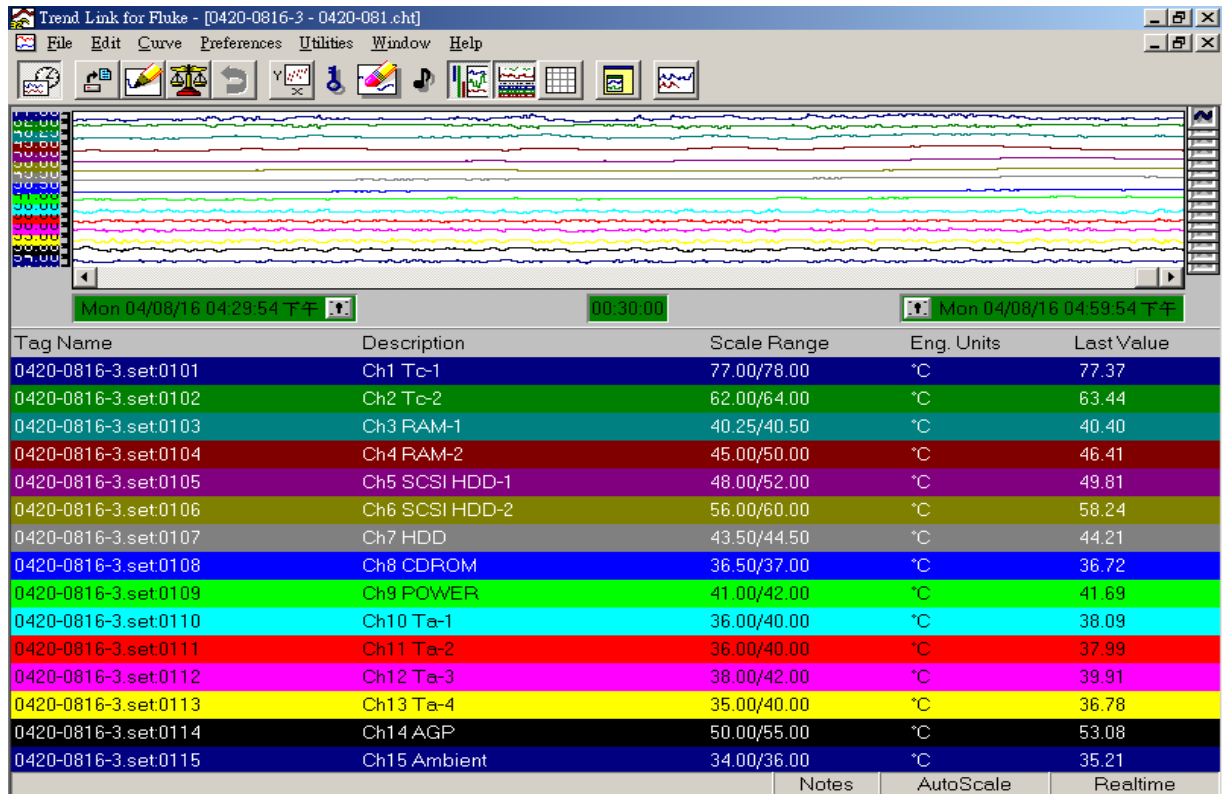
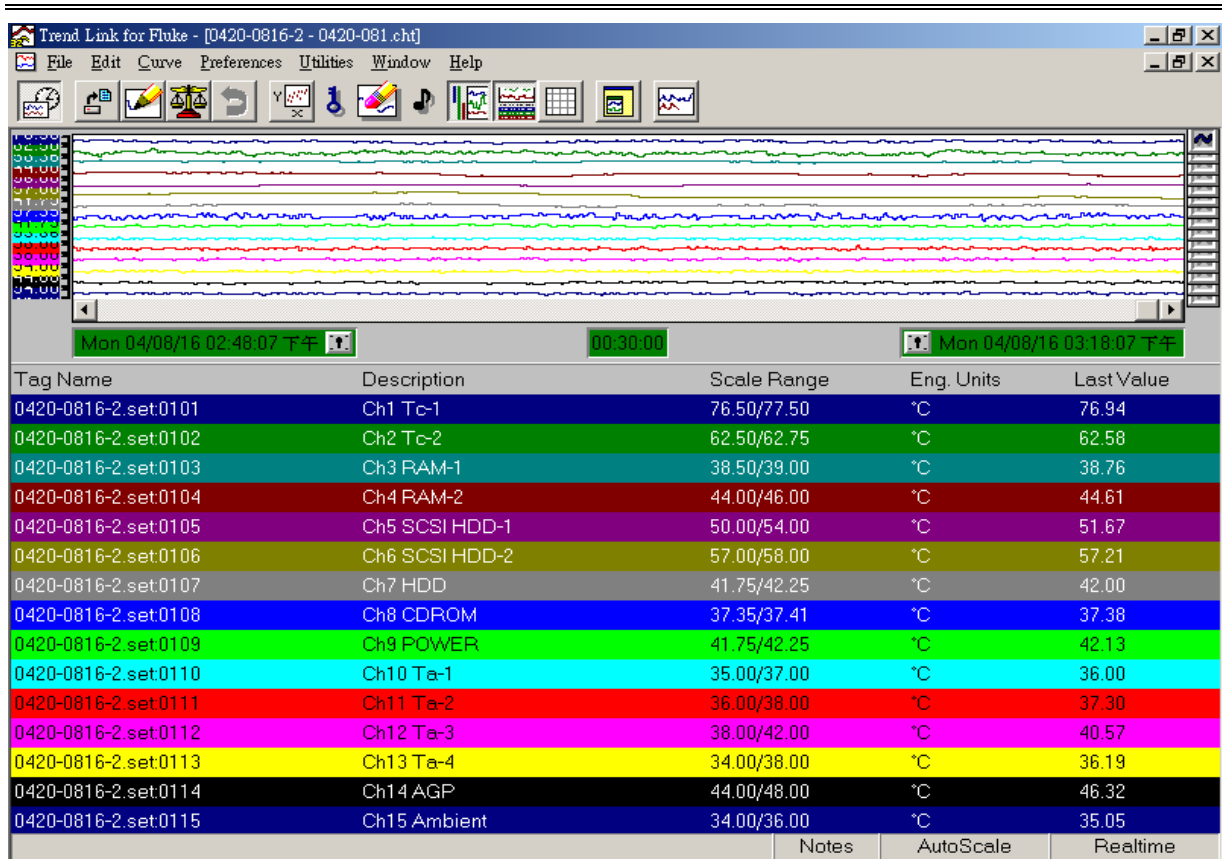
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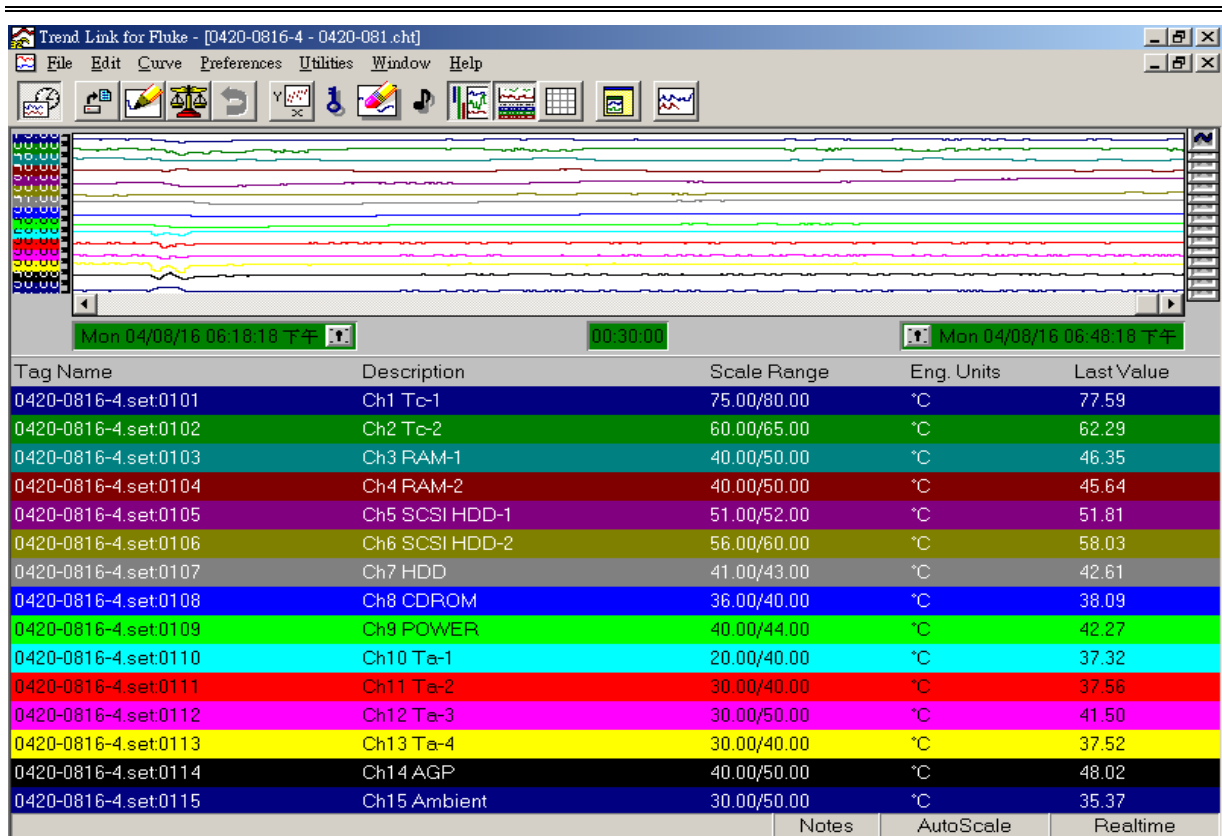


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The screenshot shows a Windows desktop environment. In the foreground, the 'Maximum Power Program for Nocona/Prescott Processor v1.3.2' is running. It displays the following results:

```

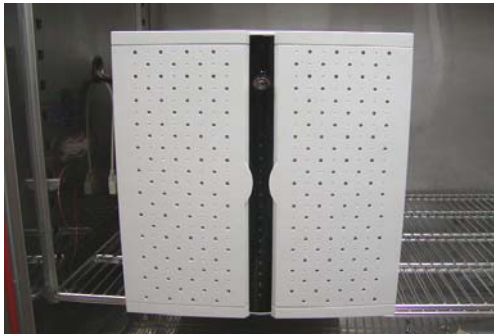
Maximum Power Program for Nocona/Prescott Processor v1.3.2
OS Version: Windows 2000
Processor with Hyper-Threading Technology
CPU Family:0xf Model:0x3 Stepping:0x4
Using Maximum Power Program for Nocona/Prescott Processor v1.2.1 W
Workload physical processor mask: 0
Workload power level (CPU0): 100%
***Workload Started - 14:00:04:0140 ***
Workload physical processor mask: 1
Workload power level (CPU1): 100%
***Workload Started - 14:00:04:0140 ***
    
```

Windows Task Manager is also open, showing the Performance tab with the following statistics:

<b>CPU Usage</b>	100%	<b>CPU Usage History</b>	[Graphs]
<b>MEM Usage</b>	291792	<b>Memory Usage History</b>	[Graphs]
<b>Totals</b>	Handles: 3631 Threads: 278 Processes: 29	<b>Physical Memory (K)</b>	Total: 1046956 Available: 733772 System Cache: 247328
<b>Commit Charge (K)</b>	Total: 291792 Limit: 2520472 Peak: 296464	<b>Kernel Memory (K)</b>	Total: 40176 Paged: 20416 Nonpaged: 19760

The taskbar at the bottom shows the Start button, several application icons, and the system clock displaying 5:30 PM.

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.



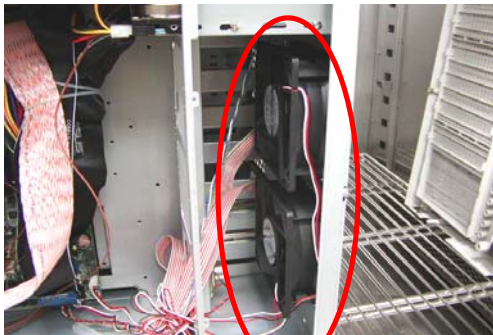
The view of the chassis back side.



The view of the thermocouples connections.



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



The view of system 1238 cm Fan\*2(Airflow in).



The view of Airguide(CAG 1.1).



The view of rear 8cm FAN \*2(Airflow out)..