

Thermal Test Report
Model : YY-5508
Thermal Performance Contest

Date:May.04, 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 P4 3.2G processor .

2. References

ATX spec <http://formfactors.org>

3. Thermal Test

3.1 Test Configuration

Chassis	YY-55508
Power Supply	Delta GPS-350BB-100A
Chassis Fan	TOP DF1209BB Speed: 2600RPM(Middle Speed) JAMICON JF1209B1MS Speed: 2500RPM(Middle Speed)
Processor	Intel P4 Prescott FMB1.5 3.2GHz/800MHz, Quantity:1
Processor Thermal solution	GlacialTech Igloo 4360, Cooler Fan(8cm) Speed:2400 RPM,dBA:26
Motherboard	GIGA-BYTE 8S648FX-RZ
Memory	Kingston DDR400 512MB, Quantity: 2
Hard Drive	SEAGATE 40G, Quantity: 1
CD ROM	Cyber CD526D, Quantity: 1
Floppy Drive	Mitsumi D359M3, Quantity: 1
AGP Card	Albatron FX5200, Quantity: 1
PCI-Sound Card	ESS SC1938, Quantity: 1
PCI-Lan Card	D-LINK DFE-530TX, Quantity: 1
PCI-Modem Card	GM56-AMI2019, Quantity: 1

3.2 Test Equipment Used

FULL SYSTEM OPERATION

Fluke Hydra 2635A

Software: Intel P4 Prescott MAXPOWER (85% & 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)

5. Summary: *PASS*

- The tests intends to understand what different from the test results between run trace software 85% level and 100%, and disconnect PCI card and connect 3 x 8w PCI card?
To look at the test result of mode 1 and 2, the chassis could provide good ambient (Tambient) in both 85% & 100% in case of disconnect PCI cards.
Once connect PCI card, look at mode 3,4,5,6, the Ta is increasing and must optimum the system fan.
- The tests intends to understand how thermal solution improved if the chassis have engineering changes to meet CAG design guide rev.1.1?
To compare the test result of mode 6 and mode 7. The chassis meets CAG1.1 design guide have better performance for Tambient and AGP area than CAG1.0.
- The test s intends to understand how is the result in the **worse case of normal operation?** we try to test it in ambient **30°C**.
We may try to compare the test result of mode 6 and mode 8. We found the Tambient just rise up 2~3°C to Ambient. It again shown the CAG rev.1.1 design guide provided thermal advantages.

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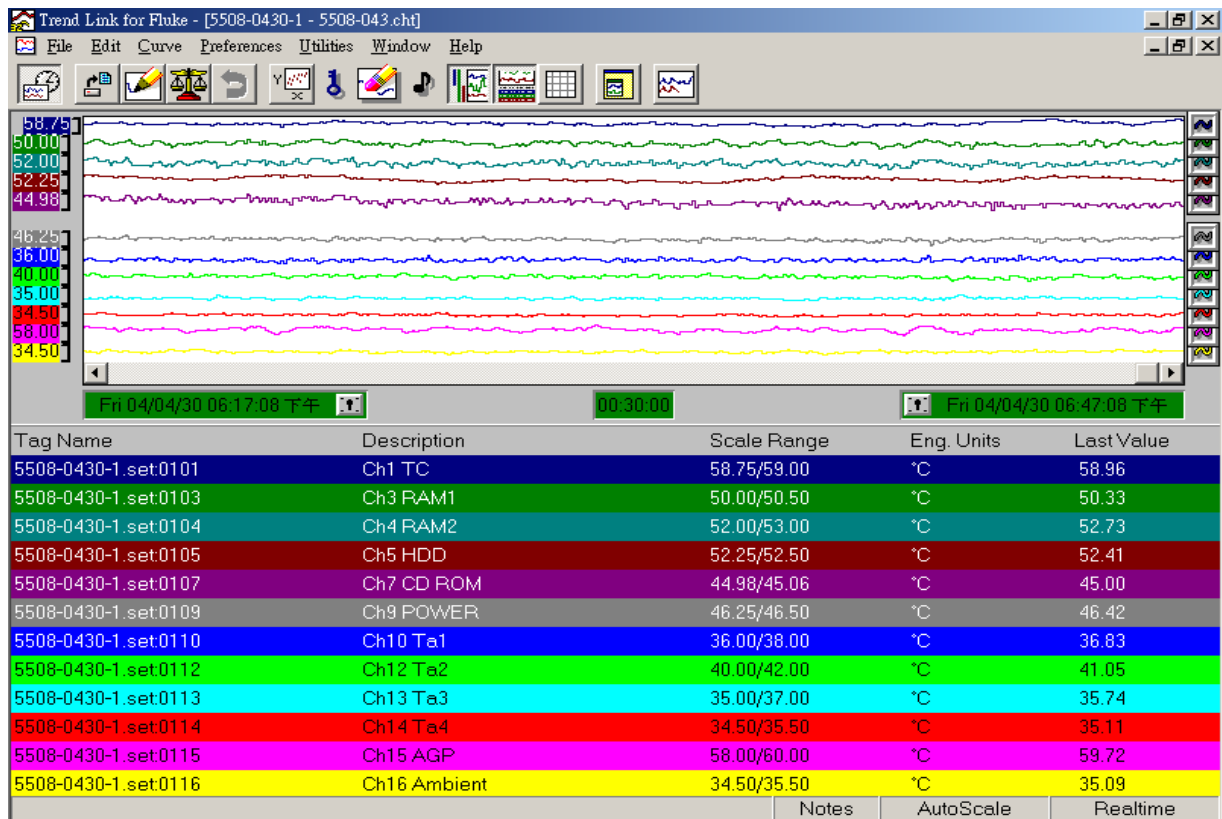
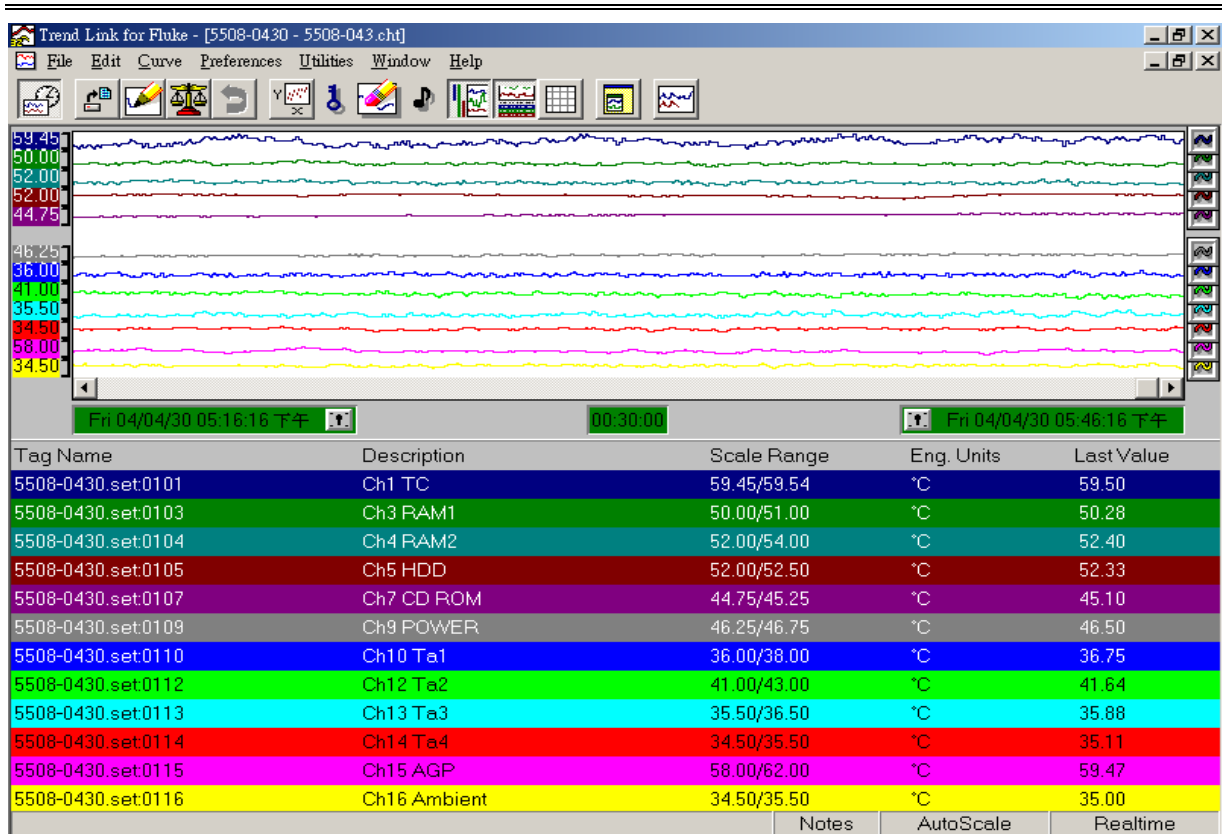
Table 4.1
Date: May.04.2004

Mode Introductions	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6
Power Model	Delta GPS-350BB-100A (with 12cm Fan for airflow in, vents for air flow out)					
System Fan (Mounted in rear side of chassis)	Yes- Top 1209BB	Yes- Top 1209BB	Yes- Top 1209BB	Yes- Top1209BB	Yes- Jamicon JF1209B1MS	Yes- Jamicon JF1209B1MS
Airguide CAG1.1	Yes	Yes	Yes	Yes	Yes	Yes
PCI Card Install	Disconnect	Disconnect	Yes	Yes	Yes	Yes
Run the test under the software on 85% or 100% level	85%	100%	85%	100%	85%	100%
Test Result (values was according to the screens of Fluke monitor)						
DIMM-1	50.3	50.3	51.2	51.2	51.4	51.6
DIMM-2	52.4	52.7	51.6	51.7	52	52.1
HDD	52.3	52.4	53.6	54	54.1	53.8
CD ROM	45.1	45	45.4	45.5	45.4	45.1
POWER	46.5	46.4	46.8	46.9	47.1	47.1
AGP	59.5	59.7	64	64.5	63.1	63.9
T-inlet 1	36.8	36.8	37.2	37.1	36.6	36.8
T-inlet 2	41.6	41.1	43.3	43.4	41.5	42.3
T-inlet 3	35.9	35.7	36.6	36.6	36.7	36.5
T-inlet 4	35.1	35.1	35.4	35.5	35.6	35.5
T-inlets average Tambient(1~4)	<u>37.4</u>	<u>37.2</u>	<u>38.1</u>	<u>38.2</u>	<u>37.6</u>	<u>37.8</u>
T-case	<u>59.5</u>	<u>59</u>	<u>59.8</u>	<u>59.6</u>	<u>59.8</u>	<u>59.6</u>
Ambient(case outside)	35	35.1	35	35.1	35	35.1

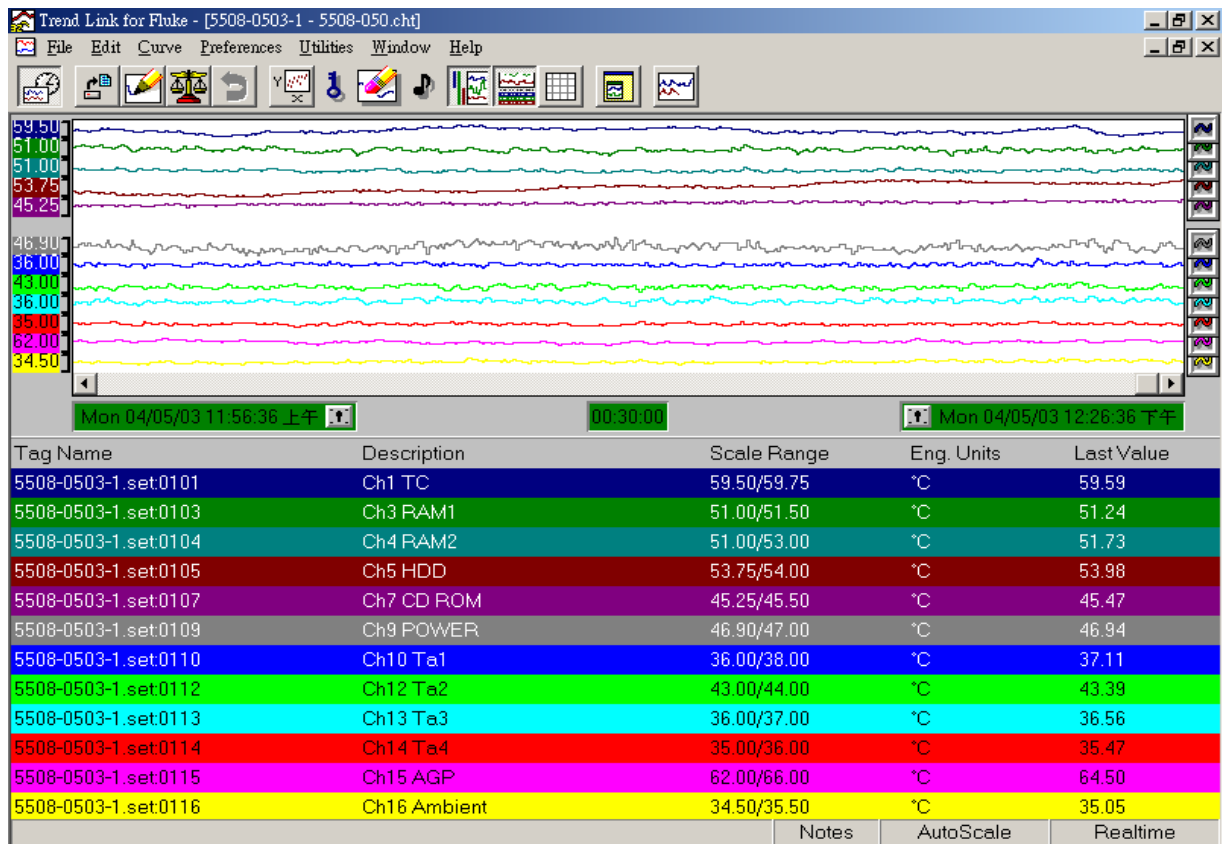
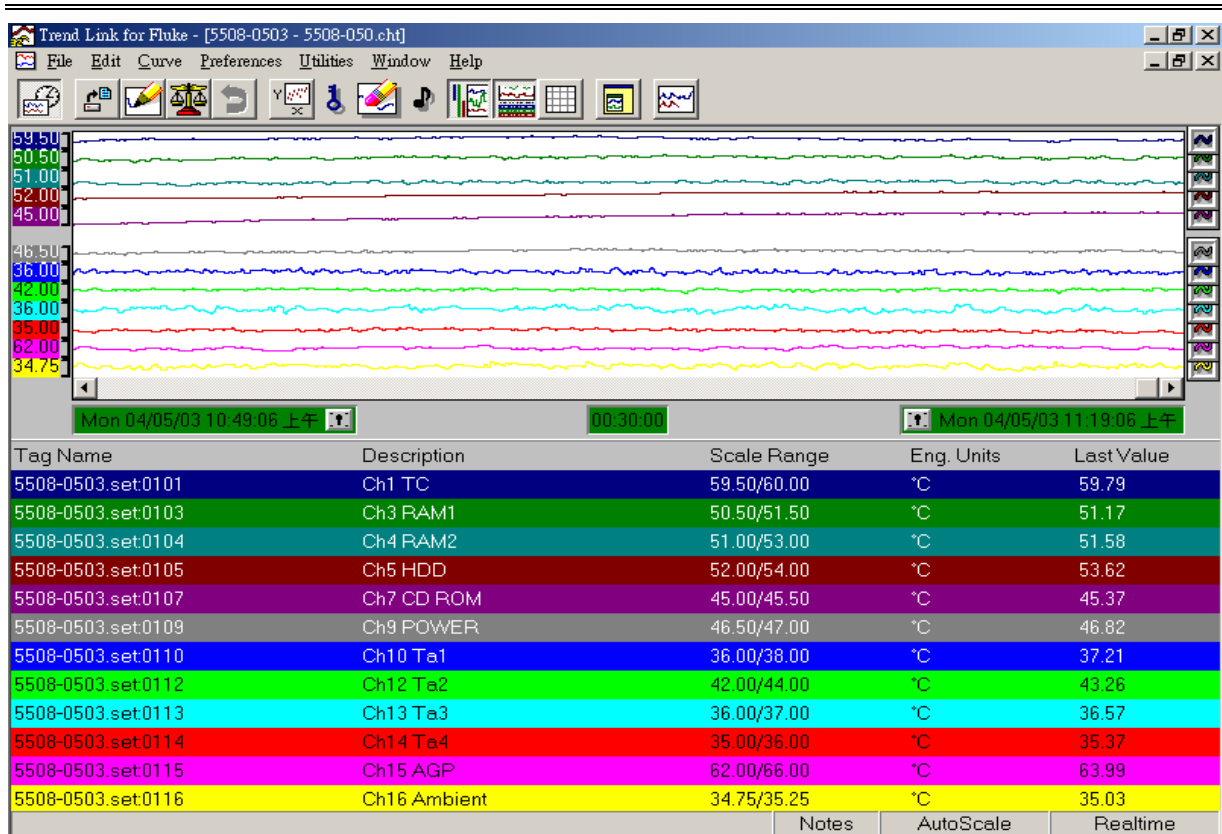
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Mode Introductions	Mode 7	Mode 8
Power Model	Delta GPS-350BB-100A (with 12cm Fan for airflow in, vents for air flow out)	
System Fan (Mounted in rear side of chassis)	Yes- Jamicon JF1209B1MS	Yes- Jamicon JF1209B1MS
Airguide CAG1.1	CAG1.0	Yes
PCI Card Install	Yes	Yes
Run the test under the software on 85% or 100% level	100%	100%
Test Result (values was according to the screens of Fluke monitor)		
DIMM-1	51.5	46.6
DIMM-2	50.8	46.9
HDD	48.7	48.9
CD ROM	44.8	40.6
POWER	48.2	42.4
AGP	72.5	58.5
T-inlet 1	42.2	31.5
T-inlet 2	42.6	38.2
T-inlet 3	39.8	32.7
T-inlet 4	36.5	30.5
T-inlets average Tambient(1~4)	40.3	33.2
T-case	60.6	55.9
Ambient(case outside)	35	30.1

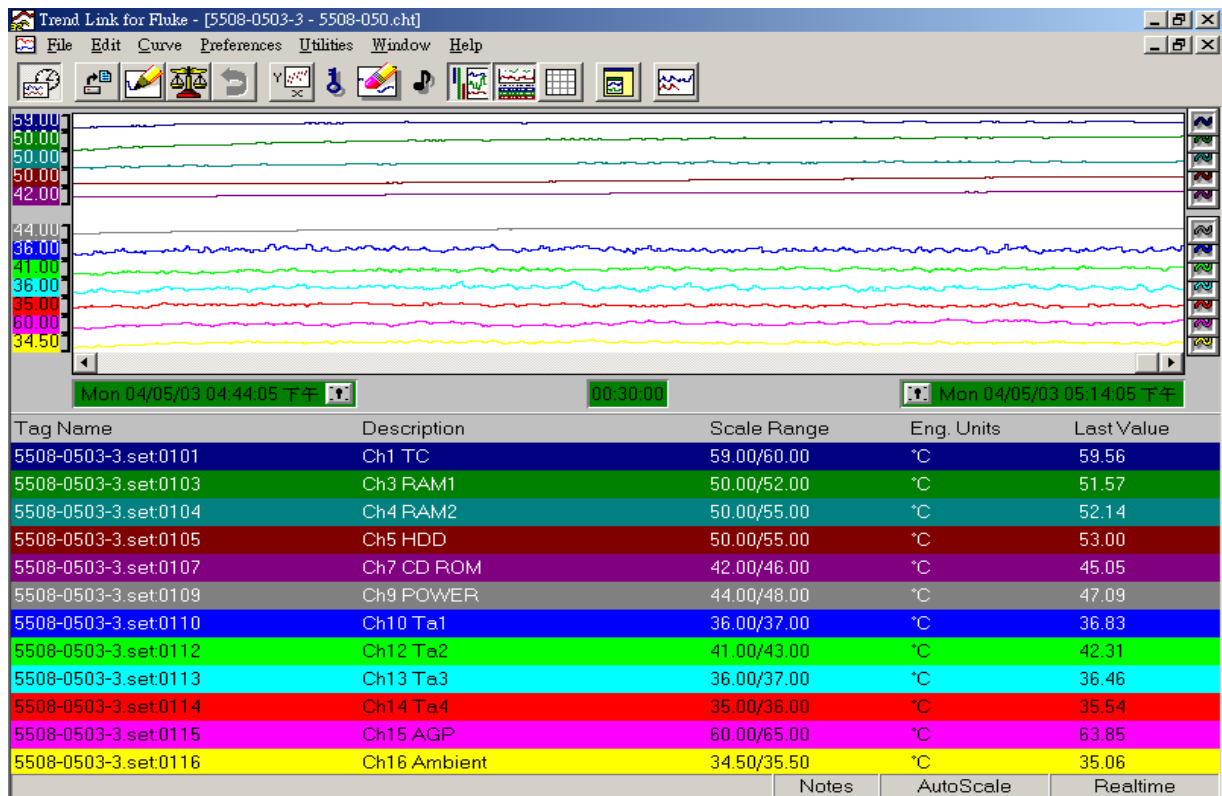
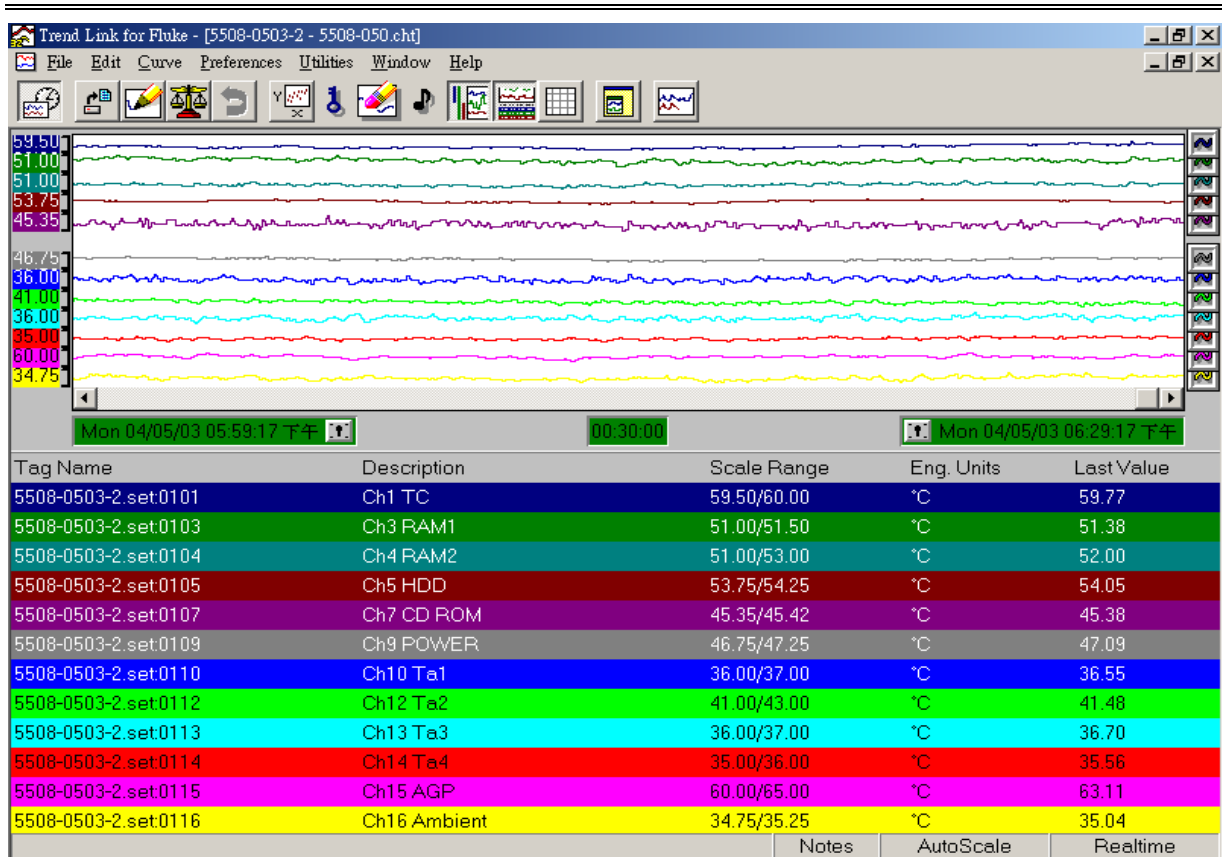
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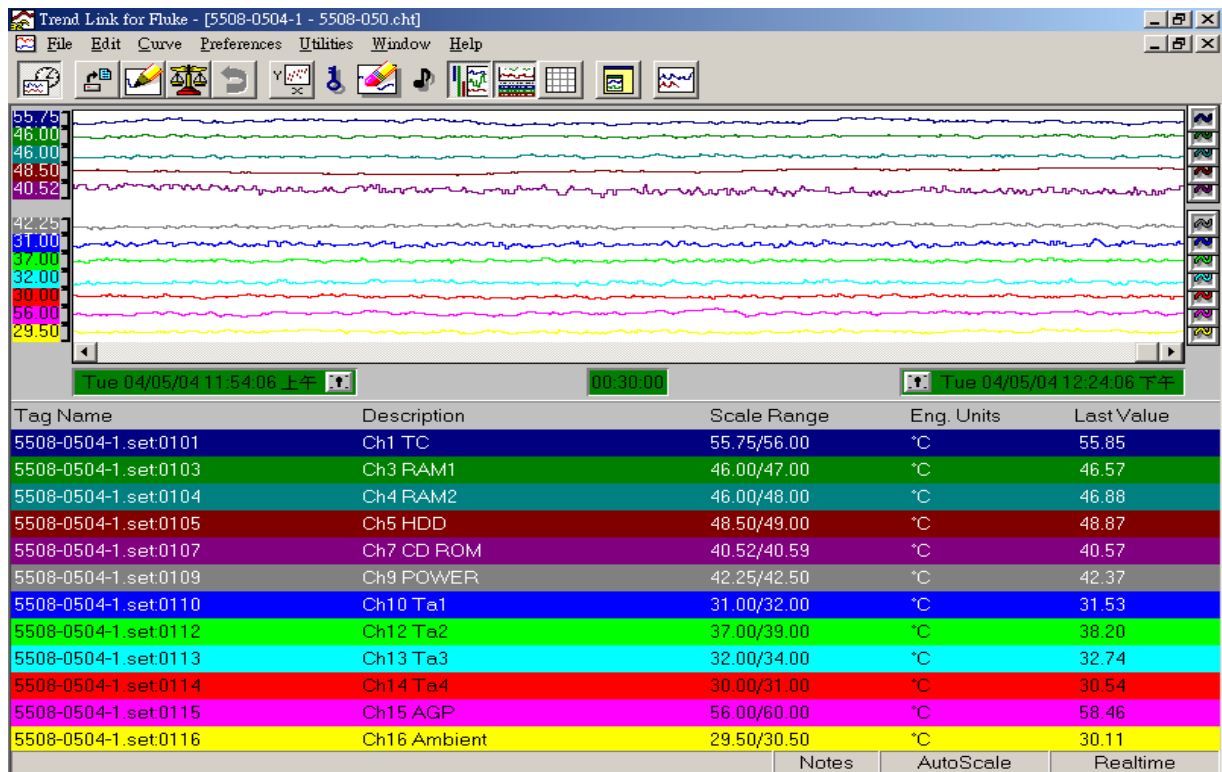
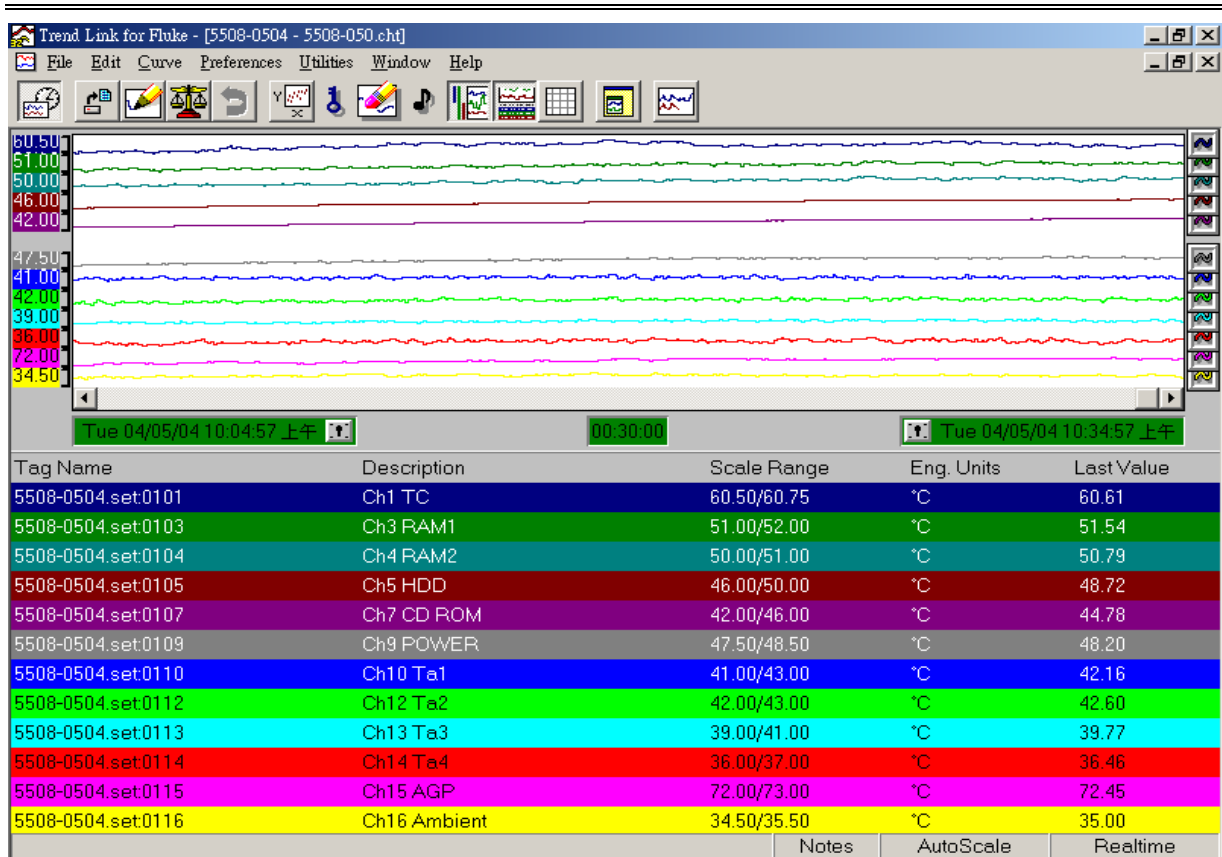


Table 4.2



The view of the chassis front side.



The view of chassis right side.



The view of the chassis left side.



The view of the chassis back side.



The view of the thermocouples connections.

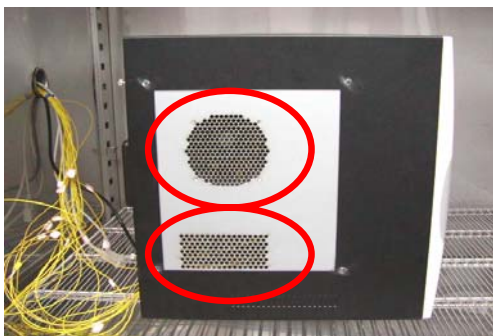


The view of Air Guide, meets CAG 1.1 (the diameter of guide is enlarged)
The tested unit is a Prototype



The view of CPU Vents - before Engineering Change for CAG1.1

Called CAG1.0, i.e. the design meets CAG design guide rev.1.0



The view of CPU Vents & PCI Vents, meet CAG 1.1 (bigger Air Guide venting area and add vents for AGP, PCI area)