

# Thermal Test Report

Model Name : **SR20169**

Rev : **A**



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## 1. Executive Summary of Results

The Chenbro Micom SR20169 Chassis provides adequate cooling for the Intel S3000AH motherboard with five Western Digital 400GB SATAII Hard Drives, two Seagate 250GB SATAII Hard Drives and one Intel Core 2 Duo E6600 processor.

Thermal Test	Test Results
Processor 1	PASS

Table 1 – Summary of Results

## 2. Introduction

The purpose of this test is to ensure that the design of tested chassis model can pass the thermal goal under specific configuration which is either inquired or the most critical one.

The components examined during this test the processor. The Room Ambient Temperature (T-Room) is specified to 35 degree C.

This report has defined test configuration, test setup, test procedures and all the relevant modifications. The test result would be valid only when the same circumstance has been applied.

The test was done by Chenbro Micom Co., Ltd. which is located at following address:

15Fl., No.150,Jian Yi Road, Chung Ho City, Taipei Hsien, Taiwan, R.O.C.

## 3. Test Configuration

The tested system configuration is as following.

Component	Manufacturer	Model Number	Q'ty	Specification
Chassis	Chenbro	SR20169	1	Pedestal Server chassis
Main Board	Intel	S3000AH	1	Full function
CPU Type	Intel	Core 2 Duo E6600	1	Dual Core 2.4GHz
Memory	Transcend	256MB DDR2 533	1	256MB DDR2 533
Chipset	Intel	3000 Server Chipset	1	Full Function
VGA (on board)	ATI	ES1000 Chipset	1	Integrated Graphics
Hard Drive	Western Digital	WD4000KS-22MNBO	5	SATAII 400GB
Hard Drive	Seagate	ST3250823AS	2	SATAII 250GB
RAID CARD	3Ware	8506-8	1	SATA RAID CARD
PSU	FSP	FSP350-60PLN	1	350W with PFC
System Fan (Rear)	ADDA	AD1212UB-A7BGL	1	120x120x25/2500RPM(PWM)
CPU Cooler	Chenbro	66H080000-055	1	Active Heatsink

Table 2 – System Configuration

#### 4. Chassis Description (as Tested)

The SR20169 chassis is a Pedestal Server chassis that may ship with a FSP 350W power supply (optional) and one system fan. It has four exposed Standard CD-ROM drive bays, one exposed FDD drive bay and five internal 3.5" HDD drive bays.

The dimensions of this chassis are 19.5"D x 7.8"W x 16.7"H

The chassis is manufactured by Chenbro Micom Co., Ltd. which is located at following address:

15Fl., No.150,Jian Yi Road, Chung Ho City, Taipei Hsien, Taiwan, R.O.C.

#### 5. Test Equipment Used

##### Thermal Chamber

The thermal chamber's picture is as following. This thermal chamber can control the Room Ambient Temperature (T-Room) at 35 degree C.



Fig. 1 – Thermal Chamber

##### Thermocouples

T-type, 36AWG thermocouples are attached to the components.

##### Data Acquisition System

The picture of Data Acquisition System is as following. The Data Acquisition System includes one Agilent BenchLink Data Logger, 48channel temperature recorder and one PC for logging the measured temperature data. The communication interface between recorder and PC is RS-232C.



Fig. 2 – Data Acquisition System

## 6. Support Software

The following software was used in this test.

- ♦ Maximum Power Program for the Conroe-Maxpower-Rev1.1
- ♦ I/O Meter. Rev.2003.05.10.
- ♦ Agilent BenchLink Data Logger Rev.1.5.030305.
- ♦ Intel Frequency Display.
- ♦ Windows SP + SP2 (English version)

## 7. Test Setup and Procedure

- ♦ Installation of the tested system
- ♦ Installation of the operating system with device drivers
- ♦ Installation of the stress software utilities
- ♦ Installation of the thermocouples
- ♦ Place the tested system into thermal chamber
- ♦ Power up the tested system
- ♦ Run the processor stress utility at 100% loading for the processor
- ♦ Run the utilities of the other devices such as HDD for simulating maximum loading
- ♦ Run the Data Logging Software to record the measurements
- ♦ Power on the process controller on the thermal chamber and control the room ambient at 35 degree C
- ♦ After the measured temperatures are settled, record the test duration and analyze the measurements.

## 8. Test Results

### Summary

With [Maximum Power Program for the Conroe-Maxpower-Rev1.1](#) running, the case temperature of processor did not exceed the specification for the [Intel Core 2 Duo E6600](#) processor under specified configuration. **Intel Frequency Display window did NOT have the instant warning message** (to present the over-heat status includes message color changed).

### Detail

Measured Points	Max. Specified Temp Limit (deg C)	Measurements @35 (deg C)	Compensated Data* (deg C)
1.T-CASE	55	55.2	54.8
2.T-A	Reference	41.1	40.7
3.VRM	105	67.6	67.2
4.Memory	70	47.2	46.8
5.North-Bridge	99	52.4	52.0
6.South-Bridge	115	73.0	72.6
7.RAID CARD	Reference	50.8	50.4
8.HDD-1	55	46.7	46.3
9.HDD-2	55	46.1	45.7
10.HDD-3	55	46.2	45.8
11.HDD-4	55	53.0	52.6
12.HDD-5	55	54.6	54.2
13.HDD-6	55	54.6	54.2
14.HDD-7	55	54.7	54.3
15.T-ROOM	35	35.4	35.0

Table 3 – Detail of Test Results

\*Compensated Data = Measurement+(35–T-Room)  
 = Measurement+(35–35.4)  
 = Measurement – 0.4

**Test Duration:** 24 hours.

## 9. Conclusion

The [SR20169](#) chassis (as tested) does provide adequate cooling for the [Intel Core 2 Duo E6600](#) processors.

The maximum temperatures of processor, which were at 100% loading of processor stress utility under 35 degree C room ambient. The most important part of the test result was that Intel Frequency Display window did NOT present the warning message.

The tested system does not necessarily represent the absolute worst-case that the system is subject to.

The system is not maximally loaded with add-in cards and their associated cables that could cause the internal temperatures to increase and reroute airflow.

## 10. Appendix A - System Setup



Fig. 3 – System Setup



## 11. Appendix B - Measured Points

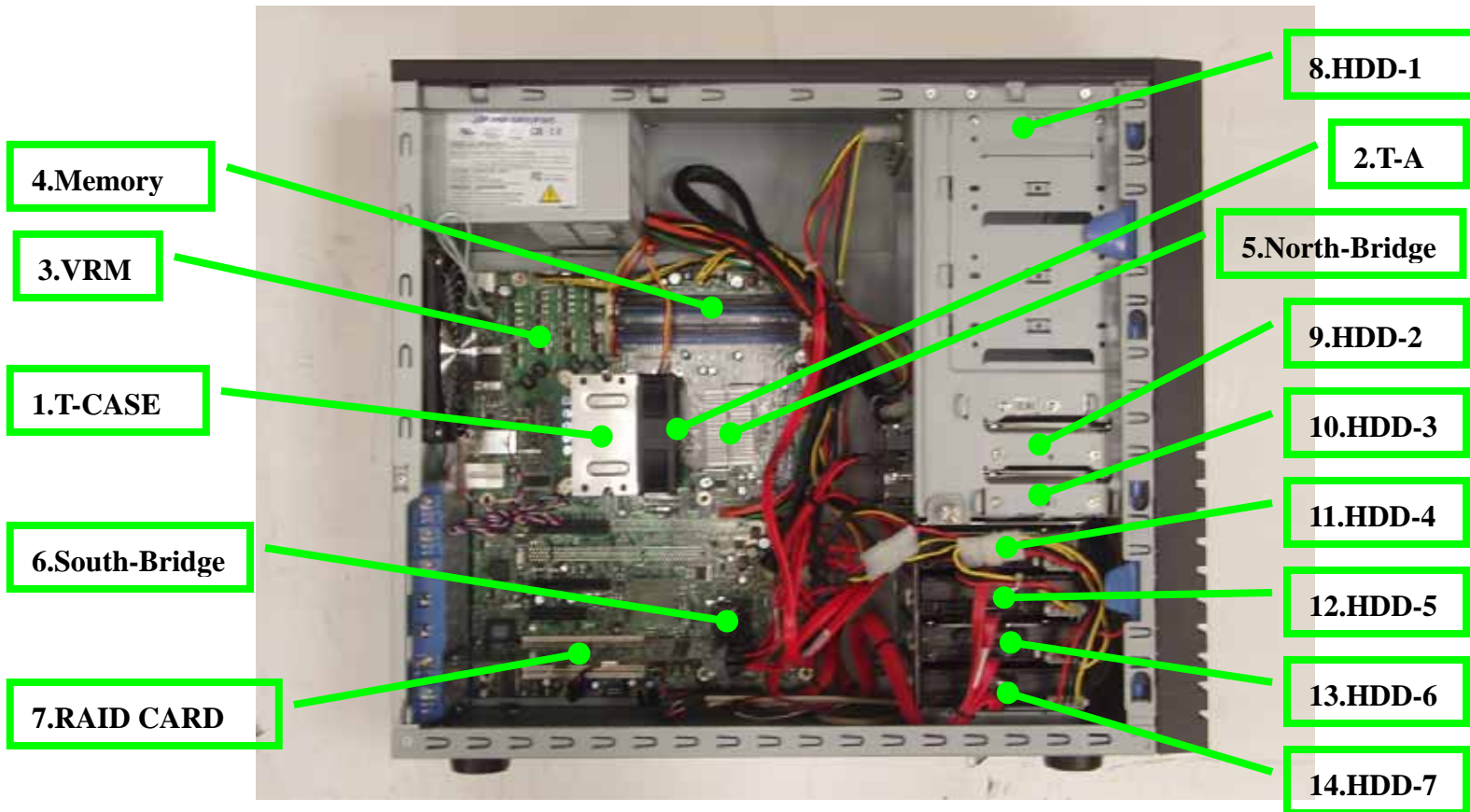


Fig. 4 – Measured Points



## 12. Appendix C - Real-Time Trend

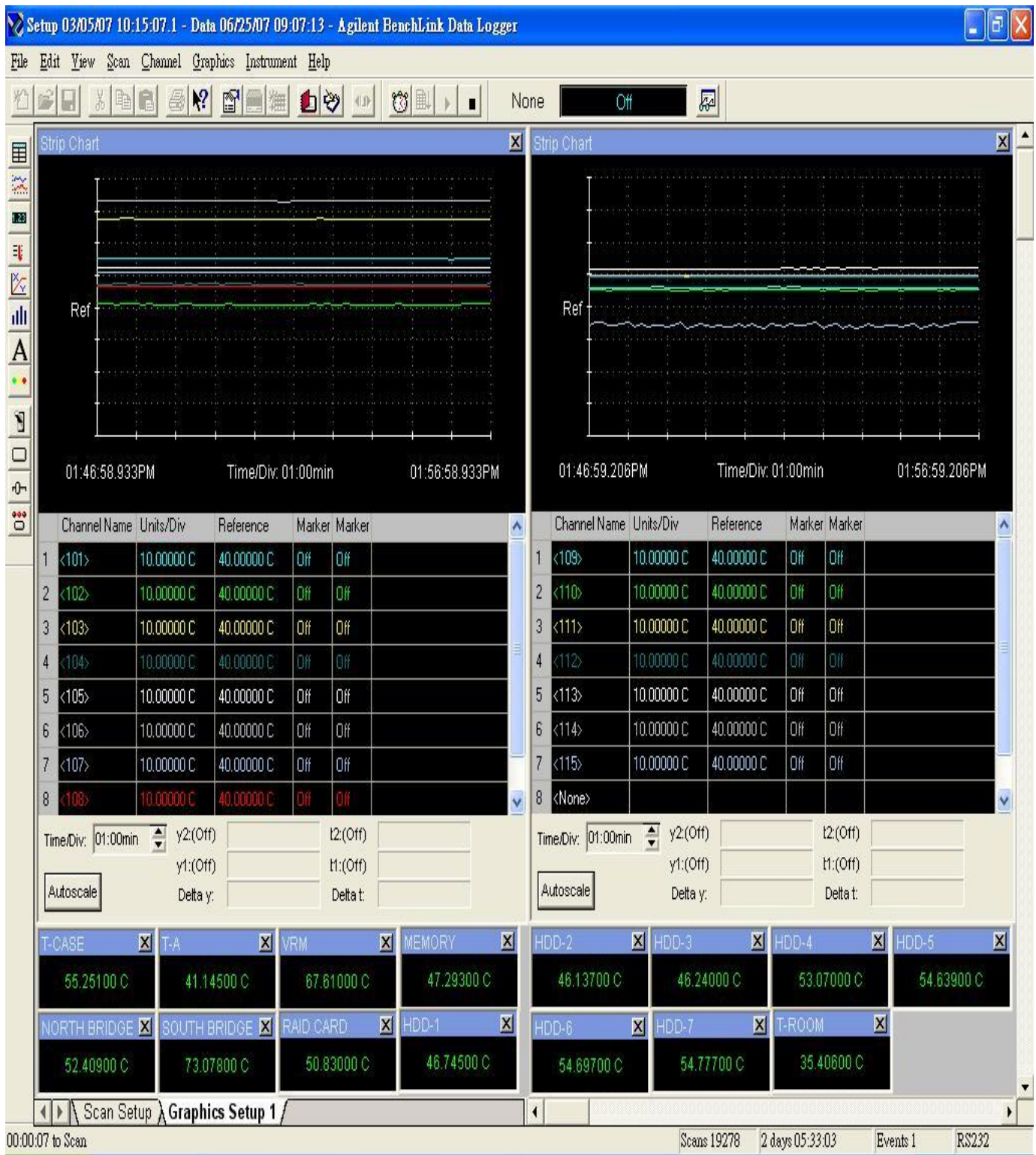


Fig. 5 – Real-time Trend

### 13. Appendix D - Intel Frequency Display

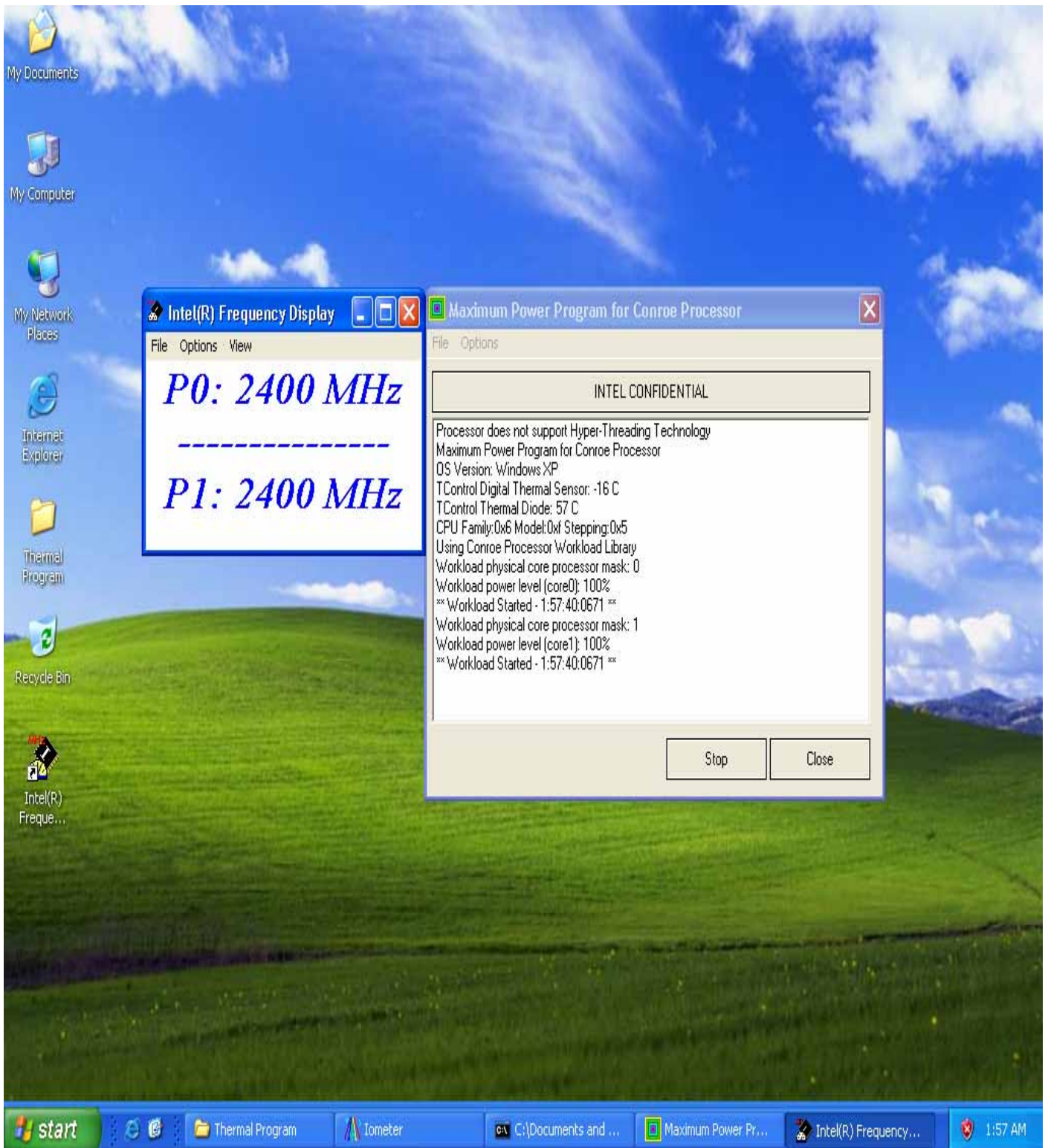


Fig. 6 – Intel Frequency Display