

Thermal Test Report

Model Name: **RM312**

Version : **B**



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TABLE OF CONTENTS

1. EXECUTIVE SUMMARY OF RESULTS	3
2. INTRODUCTION	3
3. TEST CONFIGURATION	3
4. CHASSIS DESCRIPTION (AS TESTED).....	4
5. TEST EQUIPMENT USED	4
6. SUPPORT SOFTWARE	5
7. TEST SETUP AND PROCEDURE.....	5
8. TEST RESULTS	6
9. CONCLUSION	6
10. APPENDIX A - SYSTEM SETUP	7
11. APPENDIX B - MEASURED POINTS	8
12. APPENDIX C - REALTIME TREND	9
13. APPENDIX D - INTEL FREQUENCY DISPLAY	10

1. Executive Summary of Results

The Chenbro Micom [RM312 Rackmount Server Chassis](#) provides adequate cooling for the [Intel SE7520AF2](#) motherboard with [twelve Hitachi SCSI Ultra 320 36GB Hard Drives](#) and [Dual 3.6GHz Intel Nocona](#) processors.

Thermal Test	Test Results
Processor 1	PASS
Processor 2	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 are processors. 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	RM312 Ver : B	1	Rackmount Server chassis
Main Board	Intel	SE7520AF2	1	Full function
CPU Type	Intel	Dual 3.6GHz Nocona	2	Dual Socket 604
Memory	Kingston	KVR400D2S8R3/512	4	PC3200 DDR2 With ECC Registered memory modules
Chipset	Intel	E7520	1	Full Function
I/O Processor	Intel	80332	1	Full Function
PCI-X Hub	Intel	6700	1	Full Function
VGA (on board)	ATI	RAGE XL	1	8M on board
LAN (on board)	Intel	82546GB	2	10/100/1000 Mbps Controller
Hard Drive	Hitachi	IC35L036VCDY10-0	12	10000 RPM 36GB SCSI Ultra 320
HDD Backplane	Chenbro	80-103215-006	2	SCSI HDD Backplane
CD-ROM	MITSUMI	SR244W1	1	Slim CD-ROM 24X speed
PSU	ETASIS	EFRP-3300S	1	3U 600W
SCSI(on board)	LSI Logic	53C1030	2	Ultra320
SATA(on board)	Intel	ICH5R	2	SATA 150
System Fan (middle)	Y.S.TECH	FD128032HB	4	80x80x32/4400 RPM
System Fan (Rear)	Y.S.TECH	FD128025HB	2	80x80x25/3000 RPM
SCSI Card	LSI	MEGARAID 320x2	1	SCSI Raid Card Dual channel Ultra 320
CPU Cooler	Chenbro	66-080000-026	2	Active Heatsink

Table 2 – System Configuration

4. Chassis Description (as Tested)

The RM312 chassis is a Rackmount Server chassis that may ship with a ETASIS 600W power supply (optional) and six system fans. It has one exposed slim CD-ROM drive bays, one exposed standard FDD drive bay and twelve 3.5" Hotswap HDD drive bays.

The dimensions of this chassis are 26"D x 16.9"W x 5.2"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 34970A, 48 channel 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 Nocona/Prescott Processor V1.4.2](#)
- ♦ [I/O Meter. Rev.2003.05.10](#)
- ♦ [Agilent BenchLink Data Logger Rev.1.5.030305.](#)
- ♦ [Intel Frequency Display](#)
- ♦ Windows 2000 Server (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 **85%** loading for both processors
- ♦ 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 Nocona/Prescott Processor V1.4.2](#) running, the case temperature of processors did not exceed the specification for the [Dual 3.6GHz Intel Nocona](#) processors 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 1	Reference	68.8	68.5
2.T-CASE 2	Reference	69.1	68.8
3.T1 (T-Ambient)	Reference	47.3	47.0
4.T2 (T-Ambient)	Reference	48.3	48.0
5.VRM	105	68.5	68.2
6.North-Bridge	85	56.7	56.4
7.South-Bridge	85	59.0	58.7
8.Memory	70	57.6	57.3
9.SCSI RAID CARD	60	68.5	68.2
10.IDE HDD	55	51.0	50.7
11.SCSI HDD-1	55	46.2	45.9
12.SCSI HDD-2	55	47.5	47.2
13.T-ROOM	35	35.3	35.0

Table 3 – Detail of Test Results

*Compensated Data = Measurement+(35–T-Room)
= Measurement+(35–35.3)
= Measurement – 0.3

Test Duration: 24 hours.

9. Conclusion

The [RM312](#) chassis (as tested) does provide adequate cooling for the [Dual 3.6GHz Intel Nocona](#) processors.

The maximum temperatures of processors, which were at 85% loading of processor stress utility under 40 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

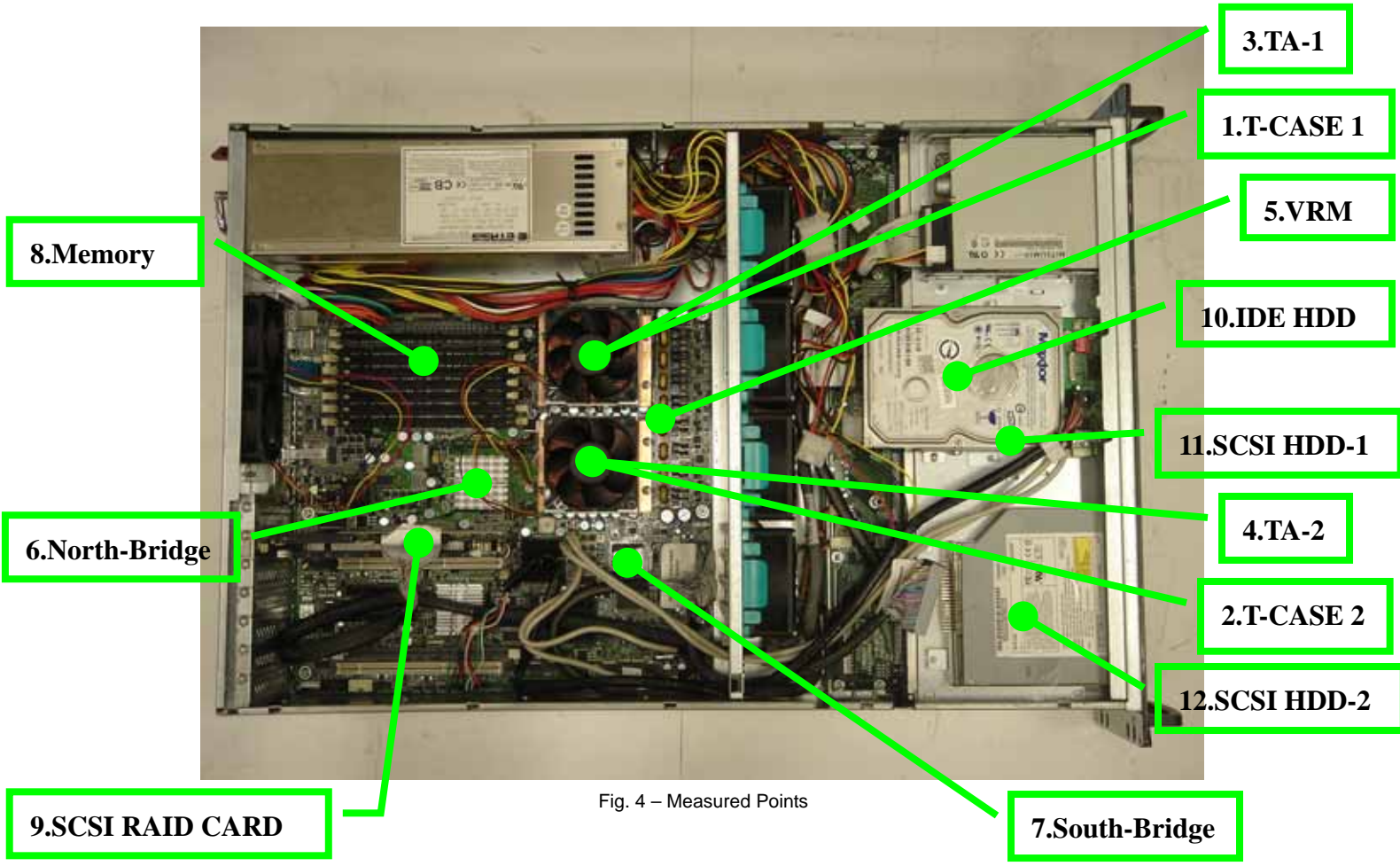


Fig. 4 – Measured Points

12. Appendix C - Real-Time Trend

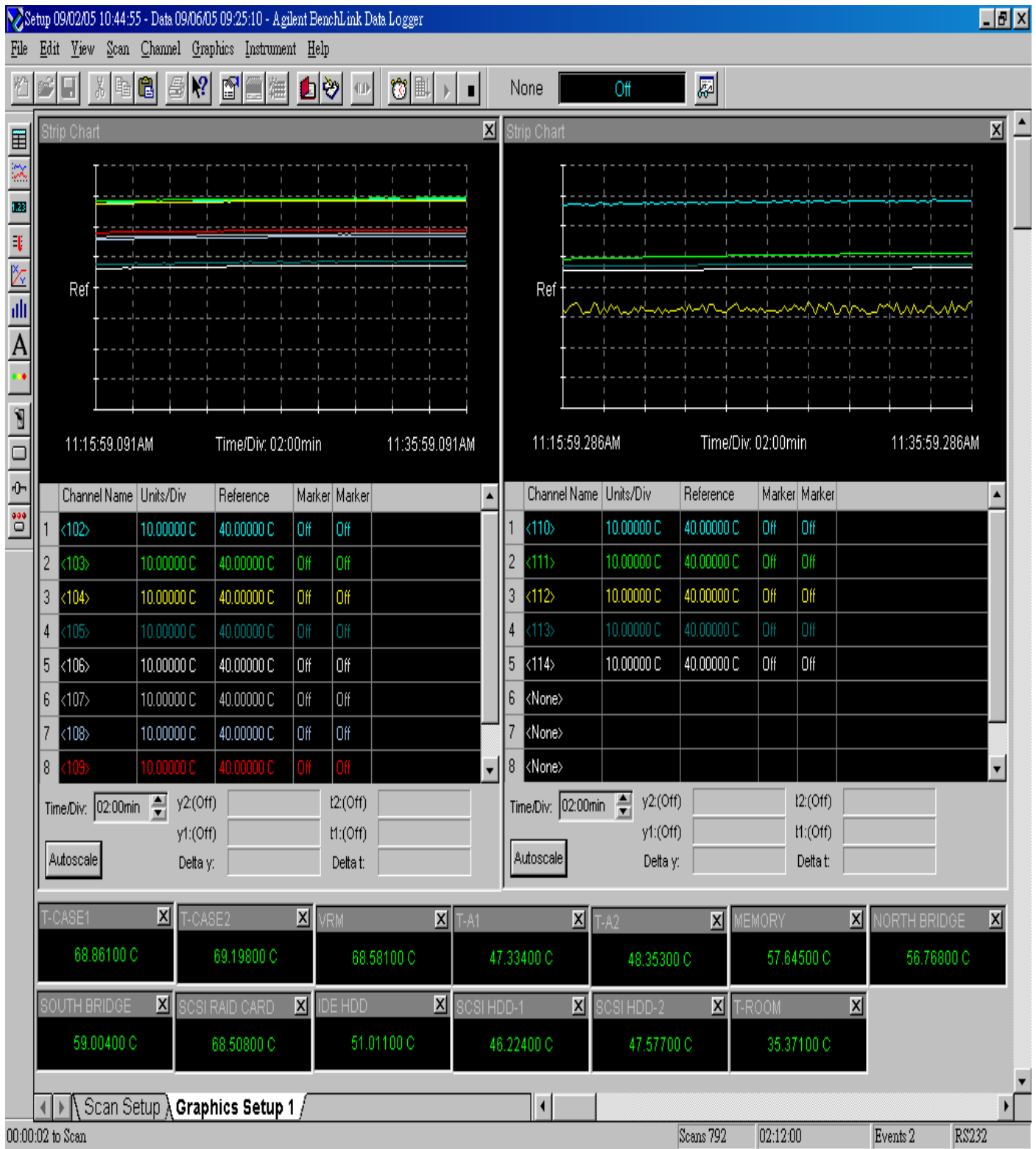


Fig. 5 – Real-time Trend

13. Appendix D - Intel Frequency Display

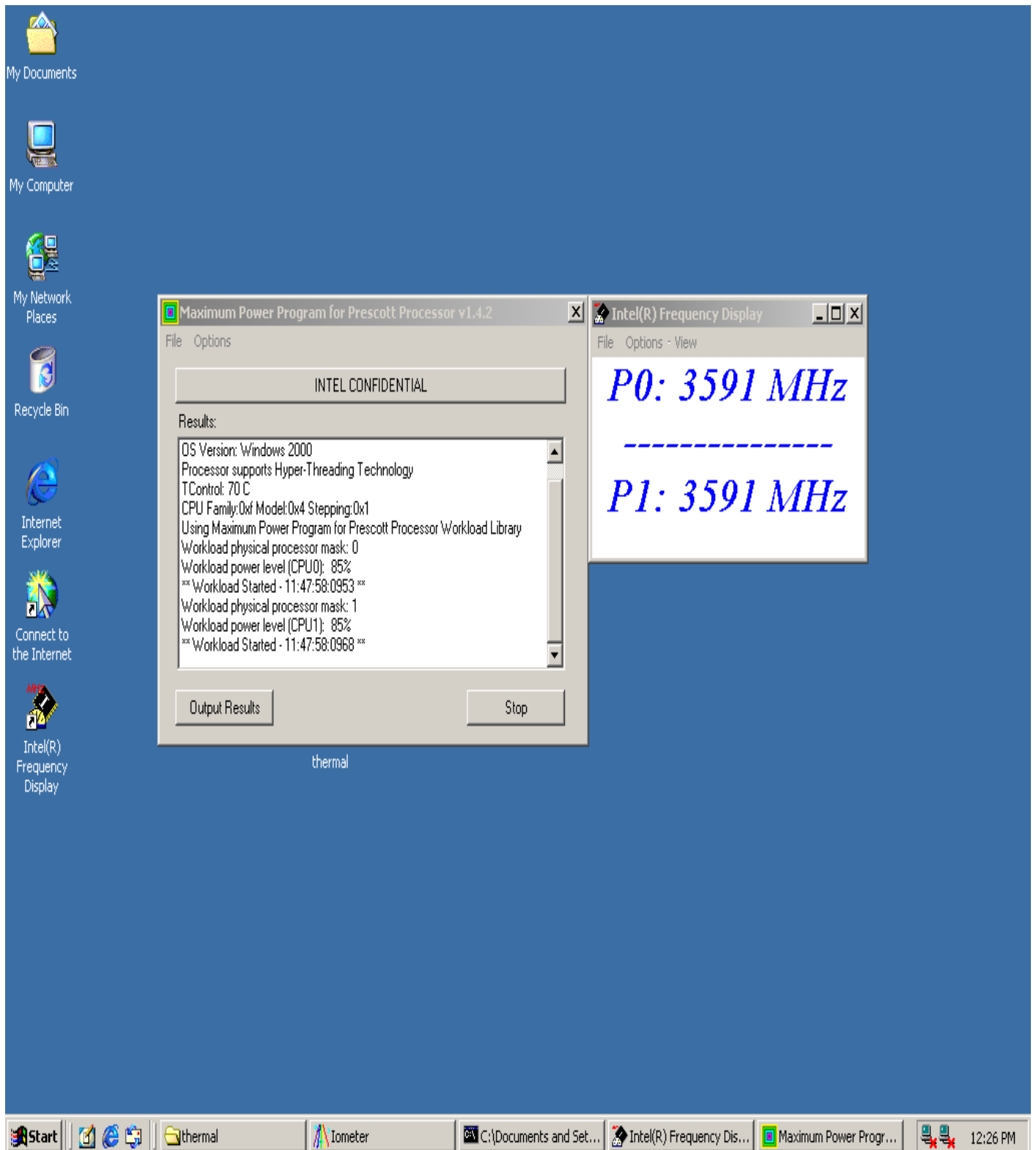


Fig. 6 – Intel Frequency Display