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MII-400 Final Performance Report

Performance Testing of the Cyrix MII-400,

Intel Celeron, and AMD CPUs

June, 1999

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Executive Summary

Cyrix contracted NSTL to test the performance of three CPUs, the Cyrix MII-400, the Intel Celeron, and the AMD. The Cyrix MII-400 CPU was tested at 95/285. The Celeron CPU was tested at 66/400, and the AMD CPU was tested at 100/400. All testing was performed using Ziff Davis' (ZD) Winstone®[1] 99 Build 14 Benchmark Utility. These tests were performed without independent verification by ZD and ZD makes no representations or warranties as to the results of the test.

About NSTL

NSTL is the leading independent information technology testing organization for the computer industry, dedicated to providing high quality services and test tools to hardware developers, software publishers, government agencies and corporations. NSTL has extensive experience developing and conducting objective tests to assess new and existing products for compatibility, performance, comparative performance, usability, and functionality. Our testing services are also used for capacity planning, acquisition support, and impact analysis. NSTL's proficiency and thoroughness provide clients with a high quality, cost-effective means to assess, differentiate and evaluate IT products. Additional information about NSTL is available through the World Wide Web at http://www.nstl.com.

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[1] Winstone is a registered trademark or trademark of ZD Inc. in the U.S. and other countries.

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Testing Environment and Methodology

Testing Environment

The Cyrix MII-400 CPU was tested at 95/285. The Celeron CPU was tested at 66/400, and the AMD CPU was tested at 100/400. Each test was performed in the Windows 98 environment using ZD's Winstone® 99 Build 14. All systems were similar with the exception of the CPU manufacturer. See Appendix A for more details.

Test Methodology

NSTL conducted performance testing for Cyrix on three different CPUs. In order to provide assurance of accurate benchmark scores, and by request of Cyrix, NSTL used a third party utility, ZD's Winstone® 99 Build 14. In order to expedite the testing process and obtain accurate test results, NSTL used the PowerQuest Drive Image Professional 1.01 to make backups of the factory image and clean image on the systems.

Backing Up of the Factory Image
When the test systems arrived, a backup was made of the factory image to ensure that the system would be tested with a "clean" environment.

Installing the Environment
NSTL then installed Windows 98. Once the install was complete, all OEM drivers were re-installed to ensure top performance of all components. The video resolution was then set to 1024x768x16-bit color.

Backing up of a Clean Image
NSTL then used Drive Image 1.01 to make a clean backup image of the systems. If at any point an unrecoverable error occurred, NSTL could restore the clean image and continue testing.

Running Winstone 99
NSTL installed ZD's Winstone® 99 Build 14, Business Tests only, on all test systems. This test suite ran Corel WordPerfect Suite 8, Lotus SmartSuite 97, and Microsoft Office 97. Winstone® 99's Startup Manager was used to deactivate unnecessary items at boot time. The taskbar properties were then changed so that it no longer stayed on top. The Business Tests were then selected and Winstone® 99 was executed. This was repeated two times to ensure the scores that were reported were within a 5% difference.

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Test Results and Analysis

The AMD CPU running at 100/400 recorded the best score for the Winstone® 99 tests with an average of 17.6 Winstone Units. This was followed by the Cyrix MII-400 95/285 system with a score of 16.9. The Celeron CPU came in with the lowest score of 16.0 for the 66/400 configuration.

Test Results

Manufacturer and Speed	Test 1	Test 2	Test 3	Average
Cyrix MII-400 (95/285)	16.7	16.8	17.1	**16.9**
AMD (100/400)	17.6	17.5	17.6	**17.6**
Celeron (66/400)	15.9	16	16.1	**16.0**

Note: All scores are in Winstone Units and all tests were performed at 1024x768x16 bit

Conclusion

NSTL performed the Winstone® 99 tests three times for each configuration. The three scores were averaged to achieve the final result. The final scores for each configuration were compared. The AMD CPU running at 100/400 recorded the best time for the Winstone® 99 test. The Cyrix MII-400 CPU at 95/285 had the next best score. The Celeron CPU running at 66/400 came in last with the slowest score.

Appendix A: System Configurations

AMD System:

System Name:	AMD
Processor Name:	AMD K6-2™ 3D Processor
Processor Speed (s):	100/400
Motherboard:	Microstar MS 5169-Ali Chipset
RAM:	64MB
Secondary Cache:	512KB
Graphics Adapter:	ATI 3D Rage Pro (atir3)
Video RAM:	4MB
Type of Video RAM:	Mach64: RagePro
Graphics Driver:	Atir3.drv, atir3.vxd, atir3d32.dll
Driver Version:	4.10.1720
Resolution	1024x768
Color Depth:	16-bit
Refresh Rate:	N/A
Hard Disk Manufacturer:	Quantum
Hard Disk Model:	Fireball EX6.4a
File System:	FAT32
Transfer Mode Used:	N/A
Hard Disk Controller Model:	AliM5229 PCI Bus Master IDE Controller
Hardware Cache (if any):	N/A
Operating System:	Windows 98 4.10.1998
Service Pack (if any):	N/A
Bios Setup	Setup defaults loaded

Cyrix System:

System Name:	Cyrix
Processor Name:	Cyrix MII-400
Processor Speed (s):	95/285
Motherboard:	Microstar MS 5169-Ali Chipset
RAM:	64MB
Secondary Cache:	512KB
Graphics Adapter:	ATI 3D Rage Pro (atir3)
Video RAM:	4MB
Type of Video RAM:	Mach64: RagePro
Graphics Driver:	Atir3.drv, atir3.vxd, atir3d32.dll
Driver Version:	4.10.1720
Resolution	1024x768
Color Depth:	16-bit
Refresh Rate:	N/A
Hard Disk Manufacturer:	Quantum
Hard Disk Model:	Fireball EX6.4a
File System:	FAT32
Transfer Mode Used:	N/A
Hard Disk Controller Model:	Ali M5229 PCI Bus Master IDE Controller
Hardware Cache (if any):	N/A
Operating System:	Windows 98 4.10.1998
Service Pack (if any):	N/A
Bios Setup	Setup defaults loaded

Celeron System:

System Name:	Celeron
Processor Name:	Intel Celeron
Processor Speed (s):	66/400
Motherboard:	Lite On DR724 Chipset SIS620
RAM:	64MB
Secondary Cache:	128KB
Graphics Adapter:	ATI 3D Rage Pro (atir3)
Video RAM:	4MB
Type of Video RAM:	Mach64: RagePro
Graphics Driver:	Atir3.drv, atir3.vxd, atir3d32.dll
Driver Version:	4.10.1720
Resolution	1024x768
Color Depth:	16-bit
Refresh Rate:	N/A
Hard Disk Manufacturer:	Quantum
Hard Disk Model:	Fireball EX6.4a
File System:	FAT32
Transfer Mode Used:	N/A
Hard Disk Controller Model:	SiS 5513 Dual PCI IDE Controller
Hardware Cache (if any):	N/A
Operating System:	Windows 98 4.10.1998
Service Pack (if any):	N/A
Bios Setup	Setup defaults loaded