Basic PC
Performance Brief

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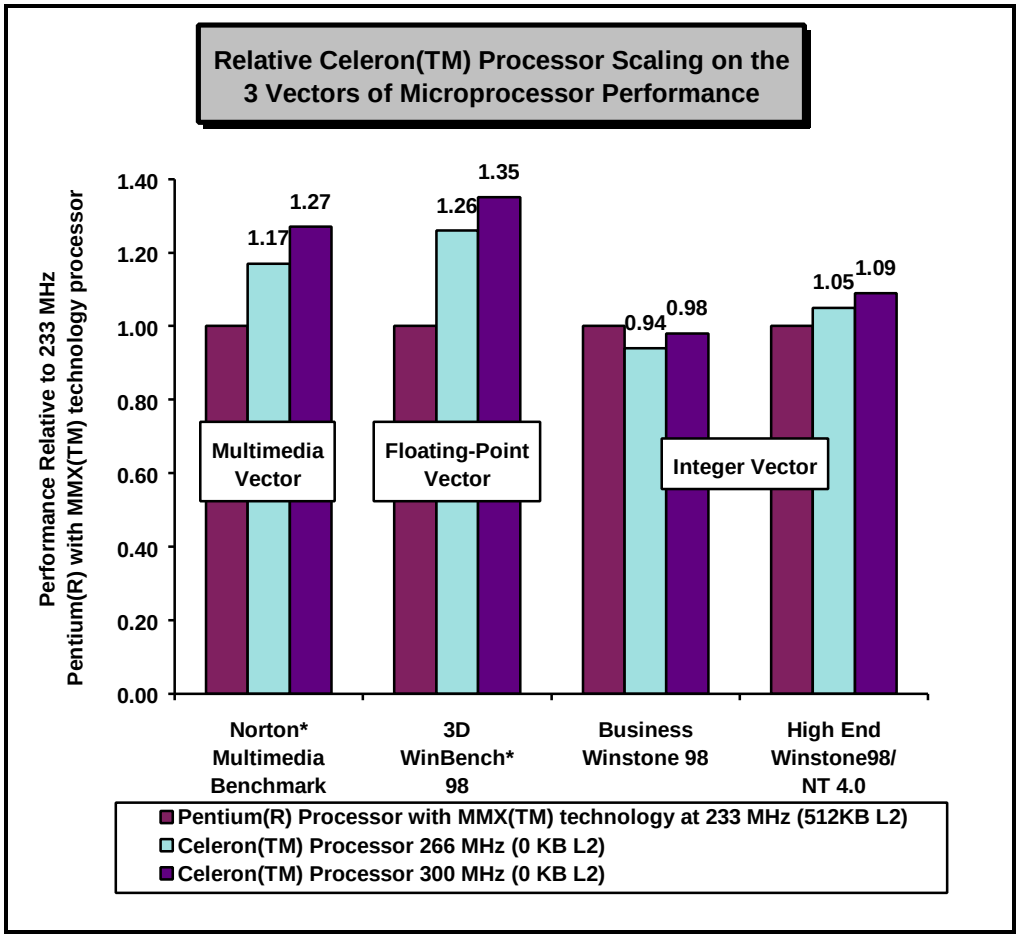
EXECUTIVE SUMMARY - INTEL CELERON™ PROCESSOR

The Intel Celeron™ processor is designed for low cost, or "Basic PC", desktops and is binary compatible with previous Intel architecture processors. It provides a cost effective foundation for the Basic PC by meeting core computing needs. Additionally, the Celeron™ processor offers particularly good performance on floating point and multimedia benchmarks. The Intel Celeron™ processor provides good performance for applications running on operating systems such as Windows* 95, Windows NT* and UNIX*. This is achieved by integrating the best attributes of Intel processors - dynamic execution performance of the Pentium® II processor plus the features of MMX™ technology - bringing a base level of performance to the Basic PC buyer.

Note that the microprocessor and the PC of today are designed to run a broad range of powerful software applications. Not every processor is equally capable of the same performance for each type of application. Multimedia (such as video and sound usage), floating- point (such as 3D geometry calculations), and integer performance comprise three vectors of performance that should be considered when evaluating systems. Specifically, benchmarks designed for evaluating these vectors should be used to look at the complete performance of the processor or the system.

This document compares the performance of the Celeron™ processor with 0 KB L2 cache to the Pentium processor with MMX™ technology with 512 KB L2 cache. The graph below highlights Celeron™ processor performance, relative to the Pentium processor with MMX technology, on popular and industry standard benchmarks that demonstrate the three vectors of performance mentioned above.



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INTRODUCTION

The Intel® Celeron™ processor is a new processor offering based on the Intel P6 microarchitecture, the same microarchitecture on which the Pentium® II processor is based. It provides a base level of functionality to meet the core needs and affordability requirements common to many new home and business users. The newest member of this new product line is the 300 MHz Celeron™ processor. The Celeron™ processor family consists of the following products:

- 300 MHz Celeron™ processor
- 266 MHz Celeron™ processor

When evaluating the performance of a microprocessor, it is important to get a complete picture of how it executes various tasks. The increasing use of 3D and multimedia content in software today is placing new demands on the microprocessor. Applications such as video playback, 3D games, and PC imaging stress the multimedia and floating-point capabilities of the processor and the system. Typical productivity applications, such as word processing, presentation applications, or personal finance programs, require the processor to have good integer performance. For the best all round computation, a system should deliver high performance in all three of these areas: multimedia, floating-point, and integer.

This report provides benchmarks results covering these three vectors of performance on Intel Celeron™ processor systems. Details of the system configurations used in all the benchmarks throughout this brief are described in Appendix A.

Modern industry standard benchmarks were chosen to demonstrate the performance of the Intel Celeron™ processor for all three vectors of performance. Multimedia performance can be compared with the Norton* Multimedia Benchmark. Floating-point prowess can be seen with the newest 3D benchmark from Ziff-Davis, 3D Winbench*98 as well as the FPU WinMark test. . Integer performance is covered by several compute-intensive 32-bit Windows*95 benchmarks as well as more system oriented benchmarks like BAPCo's SYSmark*32 test. Intel is committed to using the most robust and relevant benchmarks in characterizing its products' performance and, over time, Intel will adapt this mix as newer benchmarks appear.

Robust benchmark programs should be derived from how actual applications will execute. However, performance is often the result of combined characteristics of a given computer architecture and many other tightly coupled system software/hardware constituents in addition to the microprocessor. Operating system, compiler, library, memory design, and I/O subsystem characteristics may significantly impact the results and make comparisons difficult. This report is intended to show Intel Celeron™ processor performance on a consistent set of benchmarks.

THE INTEL CELERON™ PROCESSOR

The Intel® Celeron™ processor meets the core needs and affordability requirements common to many new users while providing the performance required for applications running on an operating system such as Windows 95*. The processor core has 7.5 million transistors and is based on Intel's advanced 0.25 micron CMOS process technology. The Celeron™ processor is backed by Intel's 25 years of engineering experience manufacturing high quality, reliable, compatible microprocessors. The Intel® Celeron™ processor is provided in a Single Edge Processor Package (S.E.P.P) enabling ease of design as well as cost efficiency. The S.E.P.P. is similar to the S.E.C.C. form factor that the Pentium II Processor uses today, and maintains compatibility with Slot 1. This packaging technology features a core processor based on the P6 microarchitecture on a single-sided, substrate without BSRAM componentry. There is no thermal plate or cover. Due to the lower power dissipation of the 0.25 micron process technology, the heat sink size has been reduced.

The Intel® Celeron™ processor may contain design defects or errors known as errata. Current characterized errata are available upon request.

INTEL CELERON™ PROCESSOR PRODUCT FEATURE HIGHLIGHTS

The Celeron™ processor is fully compatible with an entire library of PC software based on operating systems such as MS-DOS*, Windows* 3.1, Windows for Workgroups* 3.11, Windows* 95, OS/2*, UnixWare*, SCO UNIX*, Windows* NT, OPENSTEP*, and Sun Solaris*. Architectural features of the Celeron™ processor include:

- Dynamic Execution Technology.

  ⇒ Dynamic execution incorporates the concepts of out of order and speculative execution. The Celeron™ processor's implementation of these concepts removes the constraint of linear instruction sequencing between the traditional fetch and execute phases of instruction execution. Up to 3 instructions can be decoded per clock cycle. Conceptually, these decoded instructions are put into a dataflow graph, which can hold up to 40 instructions. Instructions are executed from this graph when their operands are available (versus instruction order). Up to 4 instructions can be executed per clock cycle.

- Superpipelining.

  ⇒ The pipeline of the P6 processor family consists of approximately 12 stages versus 5 for the Pentium processor and 6 for the Pentium processor with MMX™ technology. This enables the Celeron™ processor to achieve about a 50% higher frequency than the Pentium processor on the same manufacturing technology. The sophisticated dynamic, two-level, adaptive-training, branch prediction mechanism of the P6 microarchitecture is key to maintaining the efficiency of the Intel Celeron™ processor's superpipelined microarchitecture.

- High Performance Intel MMX™ Technology:

  ⇒ Intel's MMX™ media enhancement technology is a major enhancement to the Intel Architecture which makes PCs richer multimedia and communications platforms. This technology introduces 57 instructions oriented to highly parallel operations with multimedia and communications data types. These instructions use a technique known as SIMD (Single Instruction, Multiple Data) to deliver better performance for multimedia and communications computation. Intel processors that provide MMX technology support are fully

compatible with previous generations of the Intel Architecture and the installed base of software.

⇒ To further improve performance, the Celeron™ processor, like the Pentium® II processor, can execute 2 Intel MMX instructions simultaneously.

- Write Combining:

  ⇒ The Write Combining technology of the P6 Processor family can be utilized to get very high graphics I/O performance. This feature combines multiple writes to a region of memory (for example, a video controller's frame buffer) declared as WC type into a single burst write operation. This is well suited for the bus which is optimized for burst transfers. The combining also leads to burst writes of cache line sizes. These writes are further combined by the chipset leading to high throughput for graphics I/O. This will further enhance multimedia performance and enable more realistic full motion video and realistic, fast graphics performance.

- Caches:

  ⇒ The Celeron™ processor has 32 KB of non-blocking L1 cache, which is divided into a 16 KB instruction cache and a 16 KB data cache. Each of these caches run at the processor frequency and provide fast access to heavily used data.

- Floating-Point pipeline which supports the 32-bit and 64-bit IEEE 754 formats as well as the 80-bit format. The FPU is object code-compatible with the Pentium® and 486™ processor FPUs.

- Testing and Performance Monitoring Features:

  ⇒ Built In Self Test (BIST) which provides single stuck-at fault coverage of the microcode and large PLAs, as well as testing of the instruction cache, data cache, Translation Lookaside Buffers (TLBs) and ROMs.

  ⇒ IEEE* 1149.1 Standard Test Access Port and Boundary Scan Architecture mechanism which allows testing of the Celeron™ processor through a standard interface.

  ⇒ Internal performance counters for performance monitoring and event counting.

INTEL 440EX AGPSET PRODUCT FEATURE HIGHLIGHTS

The Intel 440EX AGPset optimizes Celeron™ processor performance in the fast growing segment of volume priced Basic PCs for home and business. This evolution of the Intel 440LX AGPset allows designers to easily implement the features and functionality that today's PC users expect from Celeron™ processor based systems, while keeping price points down. As its name implies, the Intel 440EX AGPset enables designers to implement Accelerated Graphics Port (AGP) performance to support popular multimedia computing applications such as 3D graphics and video on the Basic PC platform.

iCOMP® INDEX 2.0

The iCOMP® index provides a simple relative measure of microprocessor performance. It is not a benchmark, but a collection of benchmarks used to calculate an index of relative processor performance intended to help end users decide which Intel microprocessor best meets their computing needs. iCOMP Index 2.0 comprehends:

1. The accelerating transition to 32-bit operating systems and applications on the desktop.
2. The proliferation of multimedia, communications and 3D applications.
3. Updated industry-standard benchmarks appropriate for emerging popular application profiles.

The iCOMP Index 2.0 ratings cannot be compared with the earlier version of iCOMP because a different base processor and different benchmarks were used for calculation of the rating.

The iCOMP Index 2.0 rating is based on the technical categories that encompass three separate aspects of 32-bit CPU performance: multimedia, floating-point, and integer. The multimedia portion is further divided into four sub-components: Audio, Imaging, Video and 3-D. The higher the iCOMP rating, the higher the relative performance of the microprocessor.

Figure 1 illustrates the iCOMP Index 2.0 ratings for eight Intel microprocessors. System configurations used in iCOMP Index 2.0 measurements are listed in Appendix B.

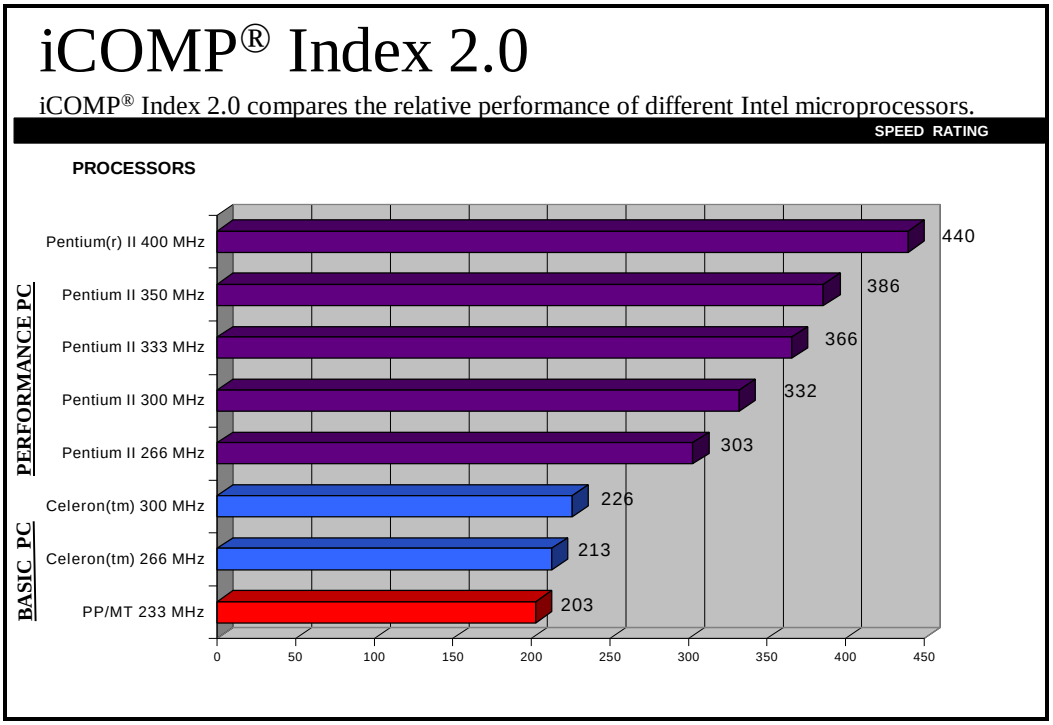

Figure 1. iCOMP® Index 2.0 Ratings for Intel Processors (System configuration for iCOMP Index 2.0 components is given in Appendix B).

iCOMP® Index 2.0 reflects the approximate, relative performance of Intel microprocessors on 32-bit applications and benchmarks. It combines five benchmarks: the Intel Media Benchmark SPECfp*95, SPECint*95, CPUmark*32, and Norton*SI-32. Each processor's rating is calculated only at the time the processor is introduced, using a particular, well-configured, commercially available system. Ratings for Pentium® II processors were calculated with 512K L2 cache. Ratings for Pentium Pro processors were calculated with 256K L2 cache. Relative iCOMP Index 2.0 scores and actual system performance may be affected by differences in system hardware (other than microprocessors) or software design and configuration, including MMX™ media enhancement technology-enabled software. Buyers should consult other sources of information, including system benchmarks, to evaluate the performance of systems they are considering purchasing. For more information about iCOMP Index 2.0, including a description of the systems used to calculate ratings, and other information about microprocessor and system performance and benchmarks, visit Intel's World Wide Web site at www.intel.com and follow the appropriate links.

*Other brands and names are the property of their respective owners

3 VECTORS OF MICROPROCESSOR PERFORMANCE

Today's microprocessors and systems are designed to run a broad range of powerful software applications. Not every processor is equally capable of the same performance for each type of application. Benchmarks specifically designed for evaluating the performance of processors and systems running multimedia-, floating-point-, and integer- intensive applications should be used to look at the complete performance of the processor or the system.

Multimedia Benchmarks

Multimedia benchmarks are designed specifically to simulate the activities of end users utilizing video, such as MPEG1 and MPEG2, Dolby* Digital Sound, AVI, PC Imaging or Video Conferencing, and other similar media-rich applications. Some of the benchmarks that fall under this category are:

- Intel Media Benchmark
- Norton* Multimedia Benchmark from Norton* Utilities for Windows*95 Version 3.0

Floating-Point Benchmarks

Applications which use three-dimensional visualization techniques, such as games, are increasingly employing floating-point performance to support richer textures and enhanced lighting effects. Floating-point performance is also a critical factor for workstation applications such as Computer Aided Design (CAD). Benchmarks that measure floating-point performance include:

- 3D graphics portion of the Norton* Multimedia Benchmark
- 3D WinBench* 98
- FPUmark WinMark Test

Integer Benchmarks

Typical productivity applications such as word processing, spreadsheets, presentation applications, and personal finance programs, depend on integer performance. Popular, industry integer benchmarks include:

Processor Level Benchmarks:

- Norton* SI-32
- CPUmark*32

System Level Benchmarks:

- SYSmark*NT
- SYSmark*32
- High End Winstone 98
- Business Winstone 98

MICROPROCESSOR PERFORMANCE SUMMARY

Multimedia Benchmarks

Intel Media Benchmark

Multimedia applications are proliferating rapidly. Intel developed the Intel Media Benchmark at a time when an adequate industry standard multimedia benchmark did not exist to measure multimedia performance. The Intel Media Benchmark measures the performance of processors running algorithms found in multimedia uses. It incorporates audio and video playback, image processing, wave sample rate conversion, and 3D geometry.

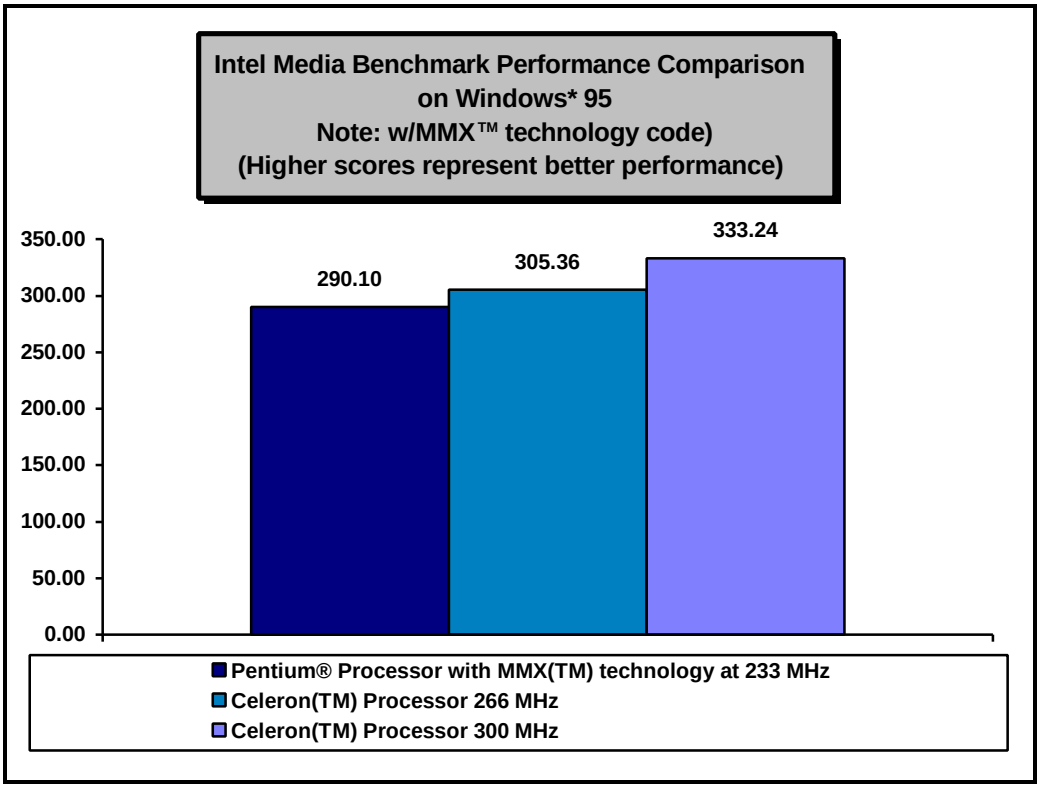

Figure 2. Intel Celeron™ Processor Performance for the Intel Media Benchmark

Norton* Multimedia Benchmark

The Norton* Multimedia Benchmark, from Norton Utilities for Windows*95 Version 3.0, tests a system's multimedia capabilities and compares the performance to that of a system conforming to the basic Multimedia PC (MPC) Level 2 specification. The benchmark reports performance in five multimedia areas:

- Video - benchmarks video performance. It measures MPEG video decompression and AVI video frame rates.
- 3D - tests rendering capabilities.
- Audio - measures audio mixing and MPEG audio performance.
- CD-ROM - measures the CD-ROM drive's maximum seek and transfer rates.
- Imaging - tests image processing manipulations.

The Norton Multimedia Benchmark overall score shows a system's overall multimedia performance rating compared to a standard MPC2 system.

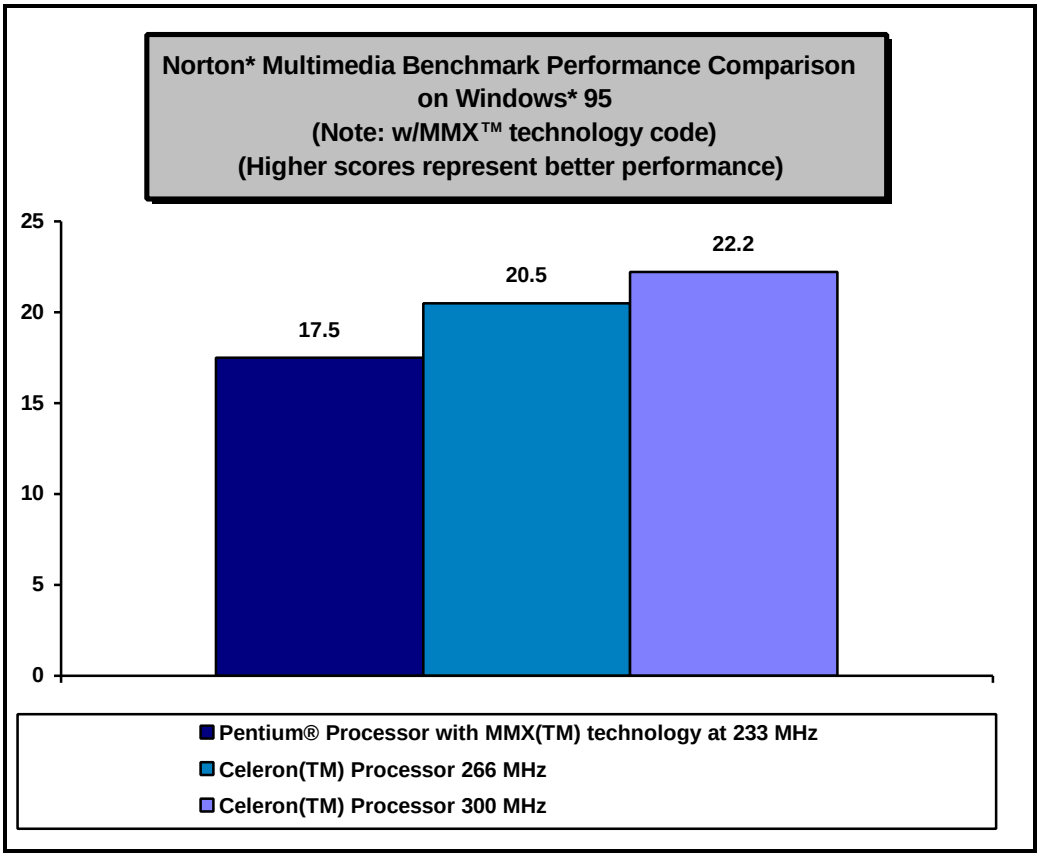

Figure 3. Intel Celeron™ Processor Performance for the Norton* Multimedia Benchmark (See Table 4 for individual component scores from the benchmark)

Floating-Point Benchmarks

Norton* Multimedia Benchmark – 3D Graphics

The Norton* Multimedia Benchmark, from Norton Utilities for Windows*95 Version 3.0, tests a system's multimedia capabilities and compares the performance to that of a system conforming to the basic Multimedia PC (MPC) Level 2 specification. The 3D Graphics portion of Norton Multimedia Benchmark uses floating-point operations in its execution.

Figure 4 shows 3D Graphics performance.

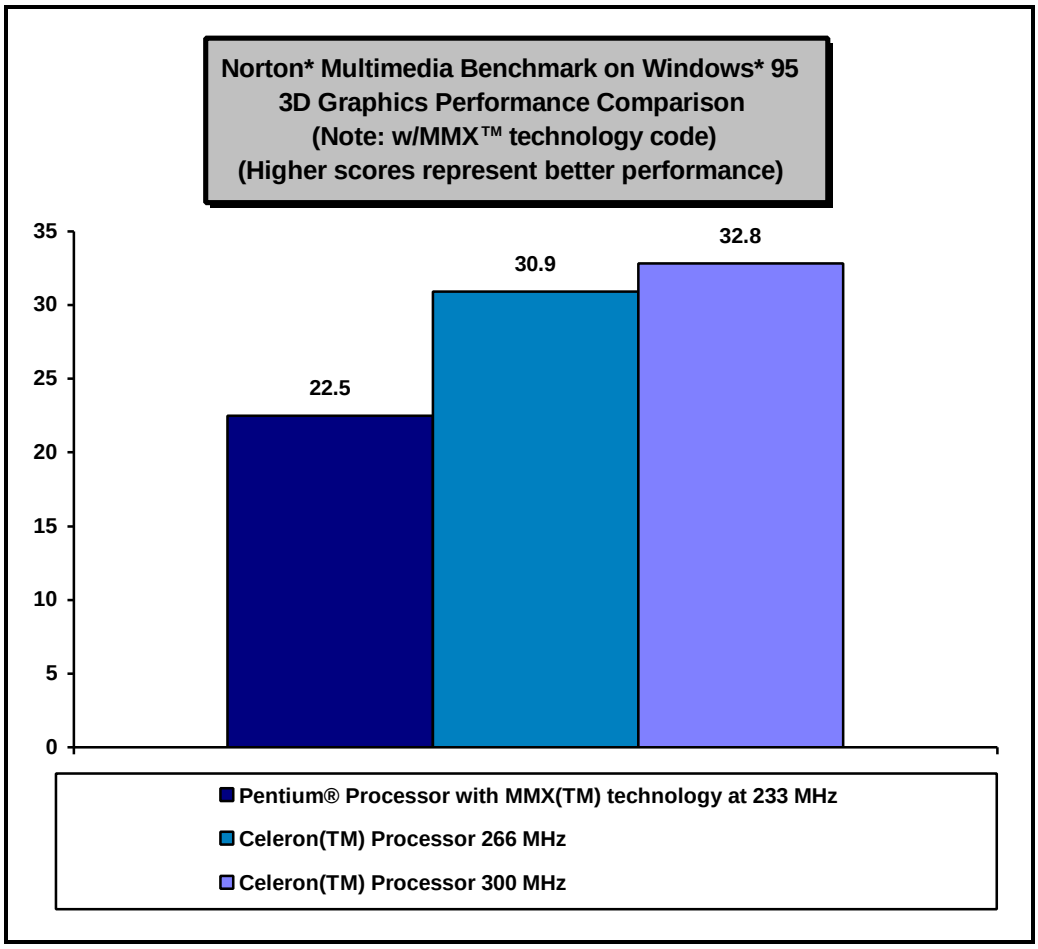

Figure 4. Intel Celeron™ Processor Performance for the Norton* Media Benchmark – 3D Graphics.

3D WinBench* 98

3D WinBench* 98, from Ziff-Davis, measures the 3D performance of a computer system (including the microprocessor and the graphics card) using Microsoft's Direct3D* interface under Windows* 95. It includes a series of 19 tests that vary in complexity - the number of triangles they use to form their objects - and the number of quality-enhancing options (such as fog, specular highlights, bilinear filtering and "mip-mapping") they employ and the amount of texture they use. The processing includes 3D geometry calculations, which are floating-point intensive, and rasterization. Each test flies through a scene using a predefined path and measures the rendering speed in frames per second. This suite returns an overall, unitless 3D WinMark* result summarizing the computer's performance on all tests.

Hardware acceleration is used when all quality-enhancing options for the given test are supported by the underlying hardware. Otherwise, software rasterization using MMX technology is employed if Microsoft's Direct3D* software rasterizer supports all the options for the test. If neither the graphics card nor the software rasterizer supports all the options, a score zero is granted.

The tests below have been run using the STB Velocity 128 PCI card. All quality tests for running this benchmark, except anti-aliasing, were marked as “passed”.

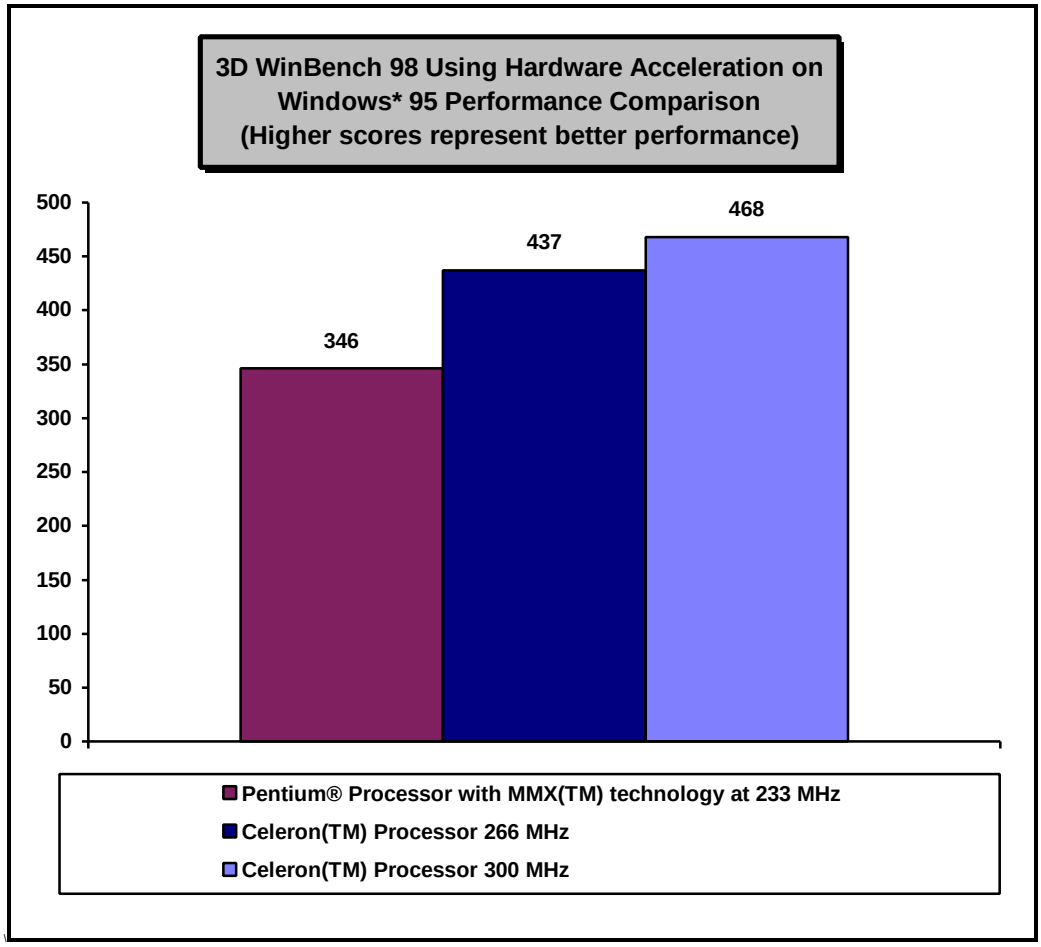

Figure 5. Intel Celeron™ Processor Performance for the 3D WinBench* 98 (using hardware acceleration) Benchmark.

FPU WinMark Test

The FPU WinMark tests the performance of the processor floating point subsystem, which is used for such tasks as high-precision scientific calculations or complex graphics rendering. Developed by Ziff-Davis, the test is synthetic. The test consists of five algorithms: 3D graphics operations, fast Fourier transforms (FFT), calculation of planetary orbitals, calculation of areas of polygons, and Gauss-Jordan elimination of coefficient matrix of linear equations. The algorithms were weighted by Ziff-Davis and are reported as one score.

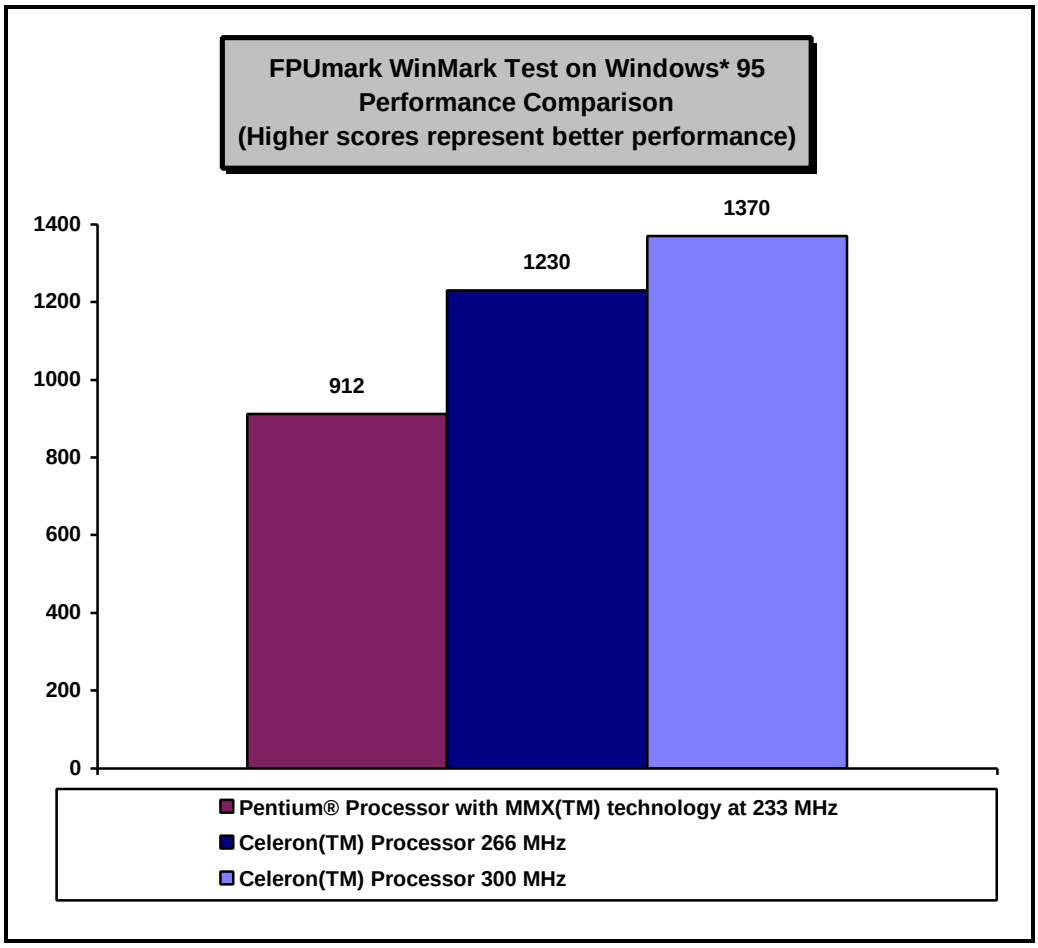

Figure 6. Intel Celeron™ Processor Performance for FPUmark WinMark Test.

Integer Benchmarks

Processor Level Benchmarks

Norton* SI 32

Norton* SI 32 is a 32-bit Windows* 95 benchmark designed to show the speed of a system (CPU, L2 cache, and memory), compared to the speed of other systems for running common 32-bit applications. This benchmark is part of the System Information module of the Norton* Utilities for Windows* 95 Version 3.0.

Figure 7 illustrates the Intel Celeron™ processor performance when executing this popular 32-bit benchmark.

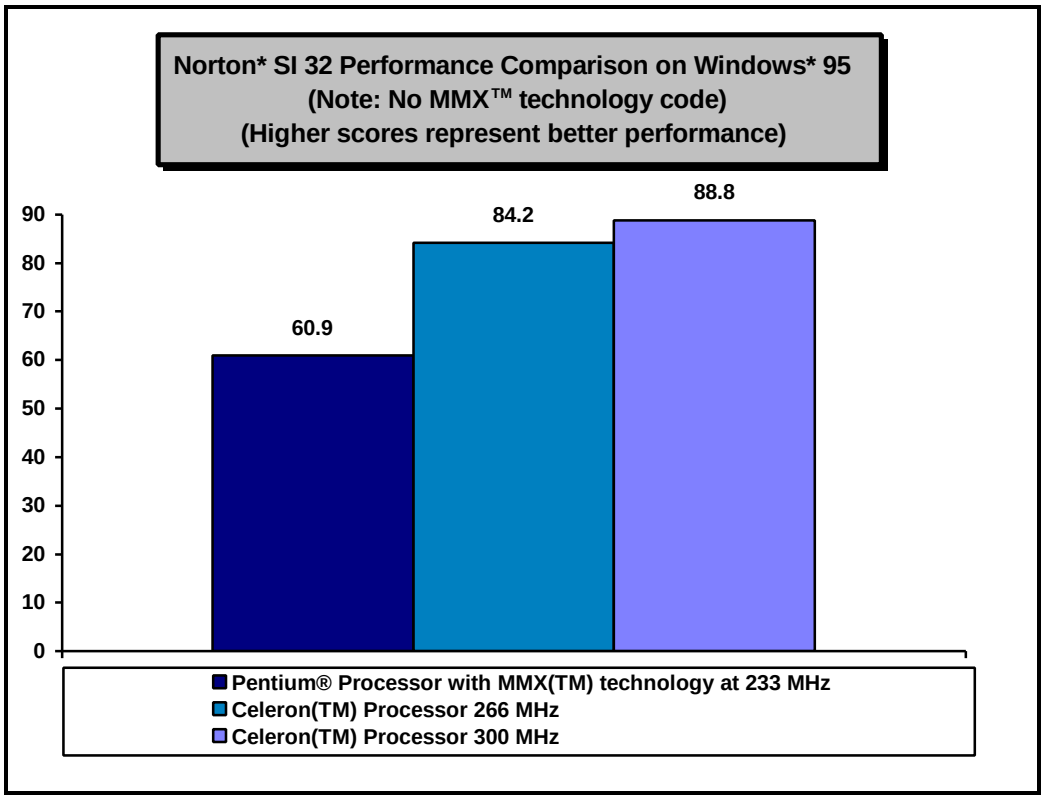

Figure 7. Intel Celeron™ Processor Performance for the Norton* SI 32 Benchmark

CPUmark*32

CPUmark*32 is a 32-bit Windows processor benchmark provided by Ziff-Davis Labs. It is designed to compare the performance potential for running 32-bit applications.

Figure 8 illustrates Intel Celeron™ processor performance when executing this popular 32-bit benchmark.

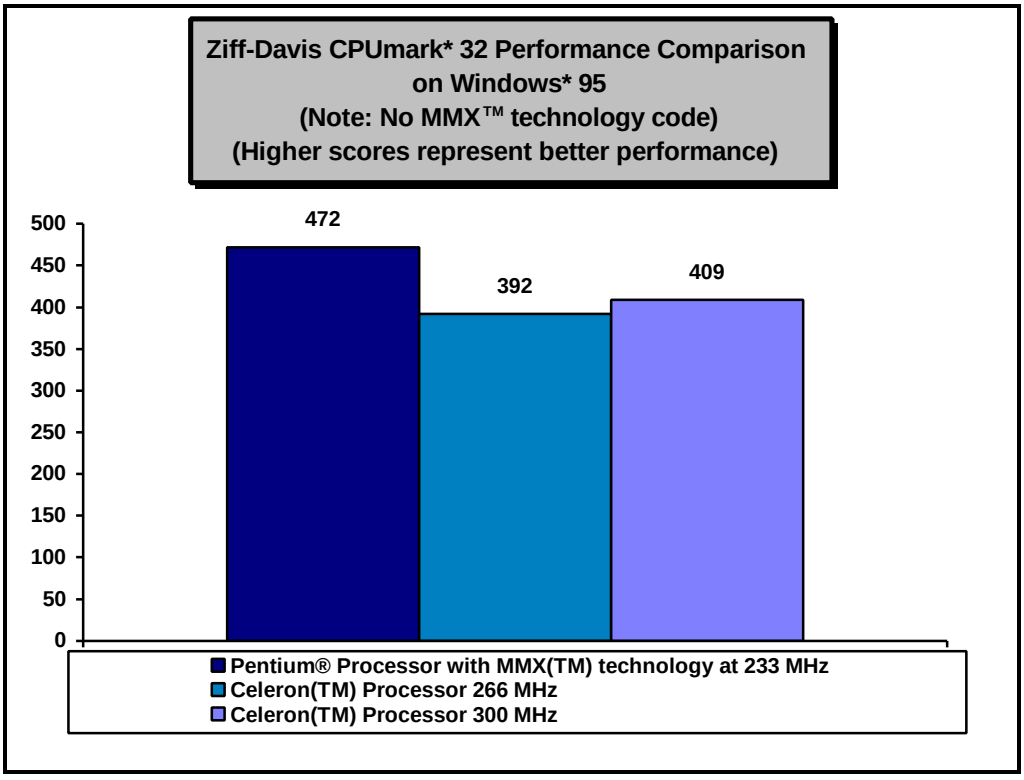

Figure 8. Intel Celeron™ Processor Performance for the Ziff-Davis CPUmark*32 Benchmark

System Level Benchmarks

To measure realistic application performance, SYSmark* for Windows NT 4.0 (32-bit applications) and SYSmark*32 for Windows* 95 were chosen to gauge the performance of Intel Celeron™ processor-based systems.

SYSmark* For Windows NT* Version 4.0

SYSmark* For Windows NT version 4.0 was developed to provide a benchmark that could be run on all platforms which support Windows NT. Workloads for SYSmark for Windows NT 4.0 were developed based on BAPCo's standardized practice of surveying users to determine how they exercise popular applications in day-to-day work. The following applications are included in SYSmark for Windows NT Version 4.0:

- Word-processing — MS Word* 6.0 (native 32-bit on all architectures)
- Spreadsheet — MS Excel* 5.0 (native 32-bit on all architectures)
- Project Management — Welcom Software Technology Texim* Project 2.0e (native 32-bit on all architectures)
- Computer-Aided Design — Orcad Layout* for Windows* 7.0 (PCB design tool) (native 32-bit on all architectures)
- Presentation Graphics — MS PowerPoint* 4.0 (16-bit Windows emulation)

Figure 9 includes the SYSmark* NT Version 4.0 rating for Celeron™ processors.

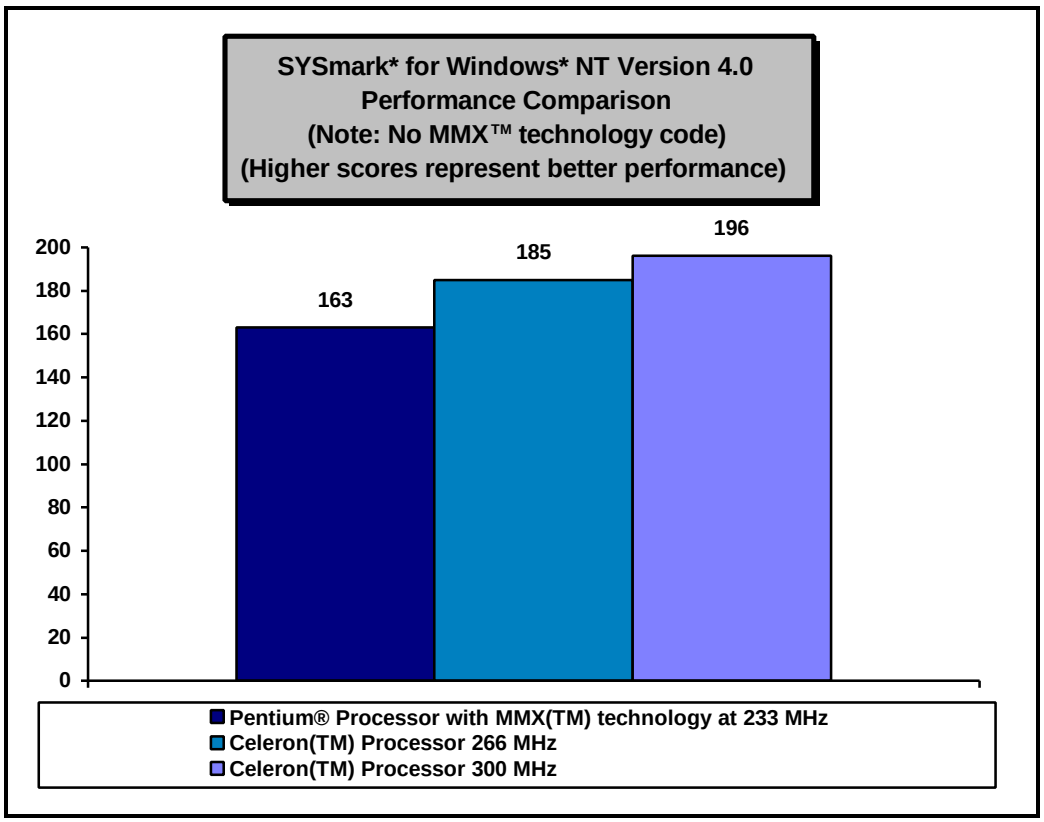

Figure 9. Intel Celeron™ Processor Performance for SYSmark* for Windows* NT 4.0

SYSmark*32 For Windows* 95

SYSmark32 for Windows 95 is a suite of application software and associated benchmark scripts that have been developed by the Business Applications Performance Corporation (BAPCo), a non-profit consortium of PC OEMs, software vendors, semiconductor manufacturers and industry publications. SYSmark*32 is intended to provide a tool for accurate and realistic measurement of personal computer performance running popular business-oriented applications in the Microsoft Windows operating environment. The scripts are developed to reflect usage patterns of PC users in a business-oriented environment.

SYSmark32 includes 32-bit benchmark scripts for the following applications selected from six categories of application software:

- Word-processing — Microsoft Word* 7.0 and Lotus WordPro* 96.
- Spreadsheet — Microsoft Excel* 7.0.
- Database — Borland Paradox*.
- Desktop Graphics — Corel CorelDraw* 6.0.
- Desktop Presentation — Microsoft PowerPoint* 7.0 and Lotus Freelance* 96.
- Desktop Publishing — Adobe Pagemaker* 6.0.

Figure 10 illustrates the SYSmark*32 rating under Windows* 95 for the Intel Celeron™ processor.

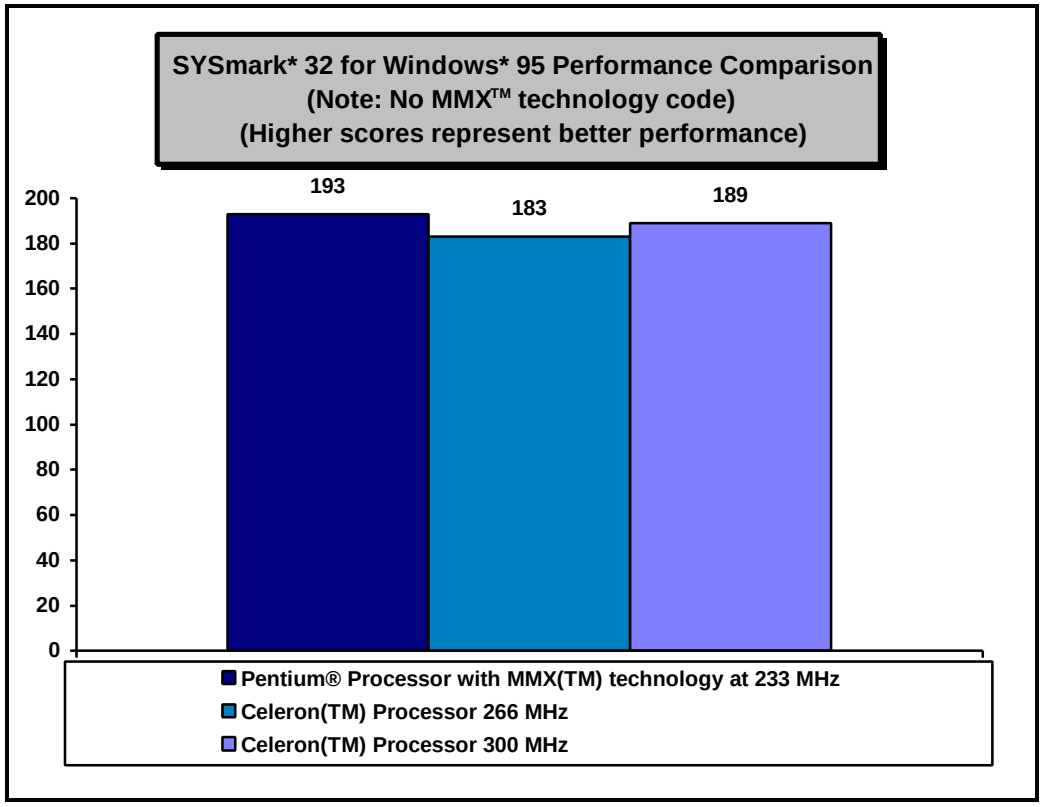

Figure 10. Intel Celeron™ Processor Performance for SYSmark*32 on Windows* 95

Winstone® 98

Winstone® 98 is a system-level, application-based benchmark developed by Ziff-Davis. It provides a means of comparing a PC's performance when running Windows-based 32-bit applications. It runs real 32-bit applications through a series of scripted activities and then uses the individual script execution times and the unit market share of the Business applications (or, in the case of the High-End applications, their editorially assigned weights) as determined by Ziff-Davis to compute the scores.

The Business Winstone 98 applications are “market-centered" tests. The Business applications are the popular applications employed by many users everyday. · The High-End Winstone 98 applications address the needs of users who employ demanding styles of work or specialized applications, such as photo editing or application development

The categories used in Business Winstone 98 are:

- Browsers — Netscape Navigator®
- Publishing — CorelDRAW!™ 7, Microsoft® PowerPoint® 97
- Spreadsheet/Database 97, — Microsoft® Access 97, Microsoft® Excel 97, Lotus® 1-2-3®
  Corel® Quattro® Pro 7
- Word Processing — Microsoft® Word 97, Corel® WordPerfect 7

The applications in High End Winstone 98 are not grouped into categories:

The Winstone 98 High-End applications are: Adobe® Photoshop® 4.01, Adobe® Premiere®, AVS/Express® 3.1, PV-Wave® 6.1, Microsoft® FrontPage® 97, and MicroStation® 95.

Figure 11 and 12 illustrates the results for High End Winstone 98 for Windows NT 4.0 and Business Winstone 98 for Windows 95, respectively.

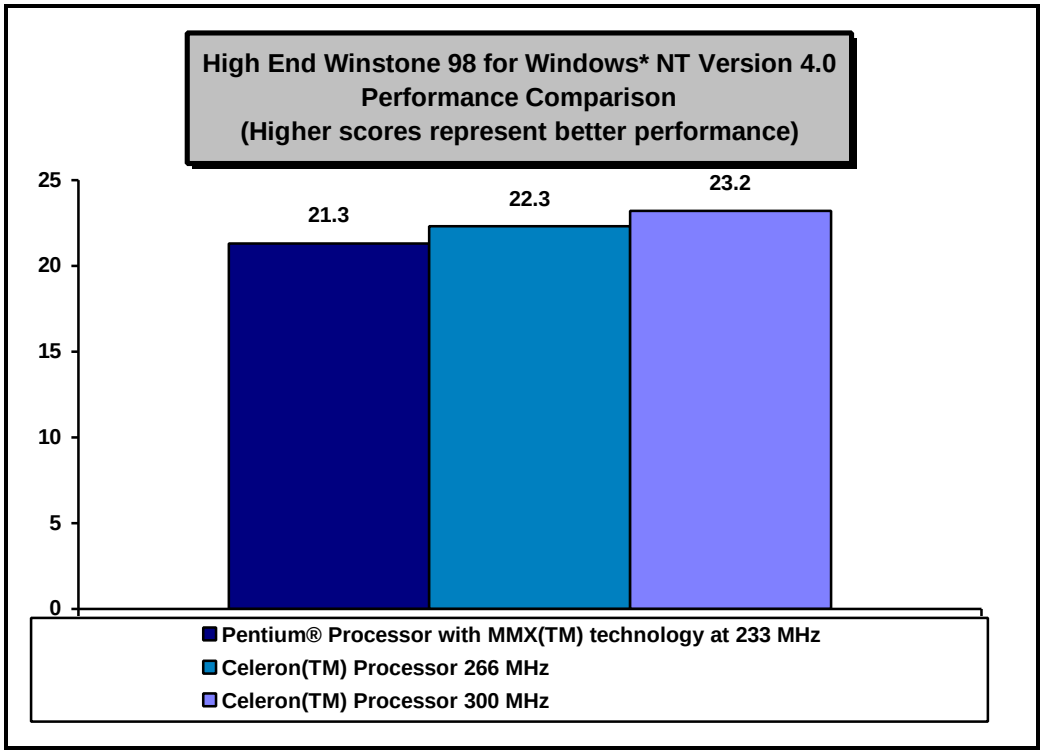

Figure 11. Intel Celeron™ Processor Performance for Winstone 98 High End for Windows* NT 4.0

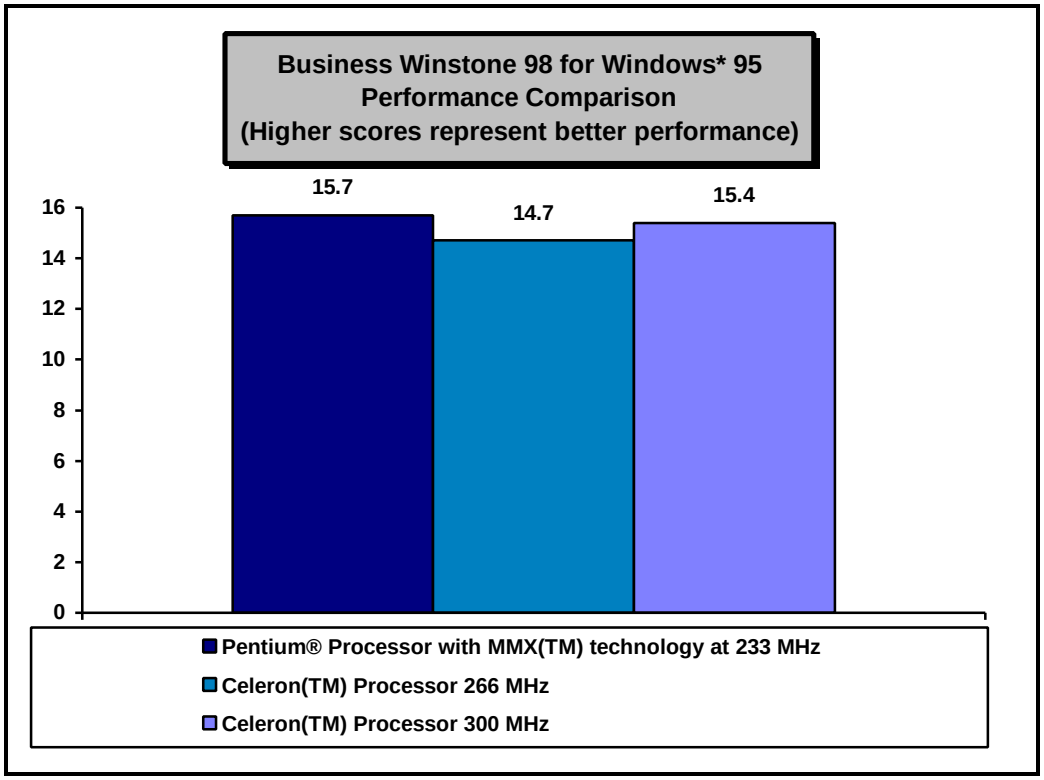

Figure 12. Intel Celeron™ Processor Performance for Winstone 98 Business for Windows* 95

SUMMARY

Table 1 summarizes the iCOMP® Index 2.0 performance of processors representative of the Intel processor families. (Higher the number better the performance)

Table 1. iCOMP Index 2.0 Results

iCOMP® Index 2.0	Celeron™ processor		Pentium® Processor with MMX™ technology proessor
	300/66 MHz	266/66 MHz	233/66 MHz
Rating	**226**	**213**	**203**

Table 2 summarizes the performance of benchmarks for the Multimedia Benchmark vector for processors representative of the Intel processor families. (Higher the number better the performance).

Table 2: Three Vectors of Performance Benchmark Results – Multimedia Benchmarks

Processor	Celeron™ processor		Pentium® Processor with MMX™ technology proessor
Frequency - MHz	**300/66 MHz**	**266/66 MHz**	**233/66 MHz**
MULTIMEDIA BENCHMARKS			
Intel Media Benchmark/ Windows* 95	**333.24**	**305.36**	**290.10**
Norton* Multimedia Benchmark from Norton Utilities for Windows 95 Version 3.0	**22.2**	**20.5**	**17.5**
Video	12.0	11.0	12.0
3D Graphics	32.8	30.9	22.5
Audio	30.2	26.8	24.8
CD - ROM	7.1	7.1	7.1
Imaging	46.6	43.1	30.9

Table 3 summarizes the performance of benchmarks for the Floating-Point Benchmark vector for processors representative of the Intel processor families. (Higher the number better the performance).

Table 3: Three Vectors of Performance Benchmark Results – Floating-Point Benchmarks

Processor	Celeron™ processor		Pentium® Processor with MMX™ technology proessor
Frequency - MHz	**300/66 MHz**	**266/66 MHz**	**233/66 MHz**
FLOATING POINT BENCHMARKS			
Norton* Multimedia Benchmark /3D Graphics	**32.8**	**30.9**	**22.5**
Ziff-Davis 3D WinBench* 98			
3D WinBench* 98	**468**	**437**	**346**
Ziff-Davis WinBench* 98			
FPUmark	**1370**	**1230**	**912**

Tables 4 and 5 summarize the performance of benchmarks for the Integer Benchmark vector, both processor level and system level, for processors representative of the Intel processor families. (Higher the number better the performance).

Table 4. Three Vectors of Performance Benchmark Results – Integer Benchmarks – Processor Level

Processor	Celeron™ processor		Pentium® Processor with MMX™ technology proessor
Frequency - MHz	300/66 MHz	266/66 MHz	233/66 MHz
INTEGER BENCHMARKS - Processor Level Benchmarks			
Windows*			
Norton* System Index*			
Norton* SI 32	88.8	84.2	60.9
Ziff-Davis CPUmark*			
CPUmark*32	409	392	472

Table 5. Three Vectors of Performance Benchmark Results – Integer Benchmarks – System Level

Processor	Celeron™ processor		Pentium® Processor with MMX™ technology proessor
Frequency - MHz	**300/66 MHz**	**266/66 MHz**	**233/66 MHz**
INTEGER BENCHMARKS - System Level Benchmarks			
SYSmark*/NT/ Windows* NT 4.0	**196**	**185**	**163**
Spreadsheet	157	151	150
Project Management	191	183	178
Word Processing	163	156	152
Presentation	253	234	164
CAD	232	215	172
SYSmark*32/ Windows* 95	**189**	**183**	**193**
Publishing	163	161	167
Graphics	193	187	206
Presentation	197	188	199
Word Processing	188	184	194
Spreadsheet	189	182	191
Database	178	176	188
High End Winstone 98/ Windows NT 4.0	**23.20**	**22.30**	**21.30**
AVS/Express 3.1	3.08	2.91	2.39
Microstation 95	1.68	1.62	1.78
FrontPage 97	2.32	2.22	2.41
Photoshop 4.0	2.72	2.63	2.36
Adobe Premiere 4.2	1.80	1.75	1.61
PV-wave 6.1	3.11	2.94	2.25
Visual C++ 5.0	2.36	2.26	2.46
Business Winstone 98/ Windows95	**15.4**	**14.7**	**15.7**
Browsers	1.98	1.90	2.09
Publishing	1.73	1.65	1.77
Spreadsheet/ Database	1.33	1.30	1.38
Task Switching	1.09	1.09	1.1
Word Processing	1.47	1.37	1.47

APPENDIX A — TEST CONFIGURATIONS

Windows* System Configuration

Processor	**Celeron™ Processor 266 and 300 MHz**	**Pentium® Processor with MMX™ technology - 233 MHz**
System	Intel 82440 EX AGPset based motherboard	Intel 82430 TX PCIset based motherboard
FPU	Integrated	
Primary Cache	32 KB (16KB I + 16 KB D)	
Secondary Cache	NONE	512 KB WB
Memory Size	Windows 95 - 32 MB SDRAM 66 MHz. KTM66X64/32 DIMM Windows NT 4.0 - 64MB SDRAM 66 MHz. KTM66X64/32 DIMM	
Hard Disk Controller/Bus	Integrated E-IDE/PCI	
Hard Disk	Seagate ST32122A	
Video Controller/Bus	For all benchmarks except Business Winstone98 and 3D WinBench 98: Pentium processor with MMX™ technology - ATI 3D Rage Pro/PCI based Celeron™ processor – ATI 3D Rage Pro Turbo/AGP Business Winstone98 and 3D WinBench 98: STB Velocity 128 PCI based	
Video Memory Size/Type	ATI 3D Rage Pro PCI- 2 MB SGRAM ATI 3D Rage Pro Turbo - 2 MB SGRAM STB Velocity 128 – 4MB SGRAM	
Operating System 1	**Windows* NT 4.0 with Service Pack 3**	
Video Driver Revision	ATI version 5.0.113	
Graphics	For Winstone98 - High End - 1024x768 Resolution, 16-bit Color For SYSmarkNT - 1024x768 Resolution, 256 Color	
Operating System 2	**Windows 95 - Build 1212**	
Video Driver Revision	ATI 3D Rage Pro - v4.10.2312 with Microsoft DirectX 5.0 STB Velocity 128 - nVidia v4.10.01.0230 with Microsoft DirectX 5.0	
Graphics	For all benchmarks except SYSmark32 - 1024x768 Resolution, 16-bit Color For SYSmark32 - 1024x768 Resolution, 256 Color	
	Audio - Media Benchmarks	
CD ROM Drive	Goldstar 24X CD ROM Model CRD-8240B	
Sound Card	Creative Labs SoundBlaster* 16	

APPENDIX B — ICOMP® INDEX CONFIGURATION

System Configuration used in iCOMP® Index 2.0 Ratings Processor	Celeron™ Processor 266 and 300 MHz	Pentium® Processor with MMX™ technology - 233 MHz
FPU	Integrated	
System	Intel 82440EX AGPset based system (Maui)	Intel 82430 TX PCIset based system
Primary Cache	32 KB (16KB I + 16 KB D)	
Secondary Cache	NONE	512K WB
Hard Disk	Quantum Fireball EIDE with Integrated EIDE disk controller	
Video	Matrox Millennium PCI	
Audio	Creative Labs Sound Blaster* 16	
Operating System	**UnixWare* 2.0**	
Memory Size	64MB SDRAM PC 100 memory	64MB SDRAM 66 MHz KTM66X64/32 DIMM
C Compiler	Intel C Ref. Compiler 2.3	
FORTRAN Compiler	Intel FORTRAN Ref. Compiler 2.3	
Operating System	**Windows*95**	
Memory Size	32 MB SDRAM	
Graphics	All benchmarks except Intel Media Benchmark - 1024x768 Resolution, 256 Colors Intel Media Benchmark - 1024x768 Resolution, 16-bit color	

iCOMP® Index 2.0 Component Scores As Measured On Appendix B Configurations

Table 6: iCOMP® Index 2.0 Component scores on Appendix B Configurations

System Configuration used in iCOMP® Index 2.0 Ratings Processor	Celeron™ Processor 300 MHz	Celeron™ Processor 266 MHz	Pentium® Processor with MMX™ technology - 233 MHz
iCOMP® Index 2.0 Rating	**226**	**213**	**203**
Intel Media Benchmark	**342.06**	**313.64**	**293.27**
SPECfp_base*95	**5.79**	**5.51**	**4.23**
SPECint_base*95	**8.30**	**7.73**	**7.12**
CPUmark*32	**435**	**415**	**472**
Norton SI*32	**94.5**	**89.6**	**61.9**