Intel® Celeron™ Processor Performance Brief

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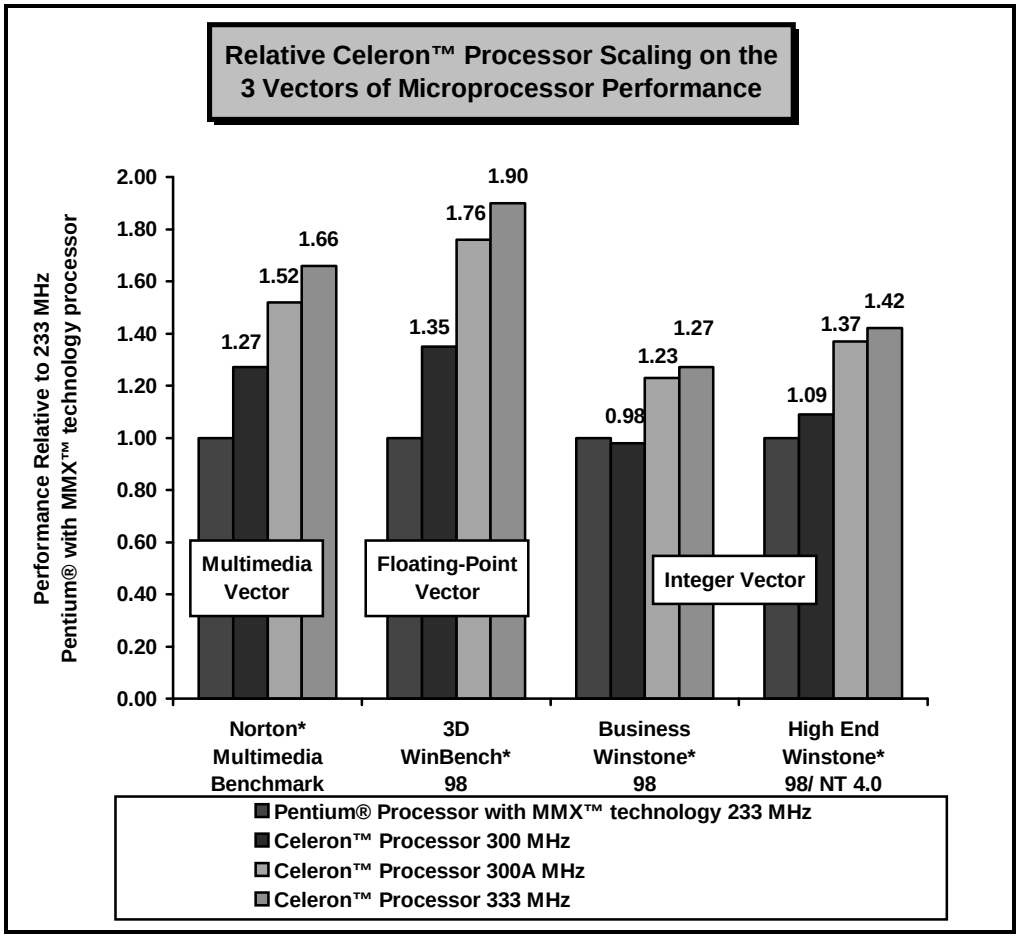
EXECUTIVE SUMMARY - INTEL® CELERON™ PROCESSOR

The Intel® Celeron™ processor is designed for low cost, or "Basic PC", desktop systems. Based on Intel's P6 architecture, the same core on which the Pentium® II processor is based, the Celeron processor provides a solid foundation for the Basic PC. Because it incorporates the P6 architecture and Intel MMX™ technology, the Celeron™ processor offers particularly good floating-point and multimedia performance. In addition, the Celeron 300A MHz and 333 MHz processors, which include an integrated L2 cache, offer Intel's highest level of integer, multimedia, and floating-point performance for the Basic PC. The Intel Celeron processor provides the capability to run today's most common PC applications on operating systems such as Windows* 98, Windows* 95, Windows* NT and UNIX*.

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 audio), floating- point (such as 3D geometry calculations), and integer performance comprise three vectors of performance that should be considered when evaluating systems. Benchmarks designed for evaluating these vectors should be used to examine the complete performance of a processor or system.

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

Based on the Intel P6 architecture, the same core on which the Pentium II processor is based, the Intel® Celeron™ processor is an exceptional value for the Basic PC. The Celeron™ processor opens the door to the internet and provides the capability to run today's most common PC applications. The newest additions to the Celeron™ processor family are the Celeron™ 300A MHz and 333 MHz processors. These processors offer Intel's highest level of integer, multimedia, and floating point performance for the Basic PC.

The Celeron™ processor family consists of the following products:

- 333 MHz Celeron™ processor
- 300A MHz Celeron™ processor
- 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 around computation, a system should deliver high performance in all three of these areas: multimedia, floating-point, and integer.

This report provides benchmark results for Intel Celeron processor systems. Modern industry standard benchmarks were chosen to demonstrate the performance of the Celeron processor for the three vectors of performance. Multimedia performance can be compared with the Norton* Multimedia Benchmark. Floating-point performance can bemeasured with 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. 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 illustrates Intel Celeron processor performance on a consistent configuration. Details of the system configurations used for the benchmarks throughout this brief are described in Appendix A.

THE INTEL® CELERON™ PROCESSOR

The Intel® Celeron™ processor offers Intel's quality and dependability at an exceptional value, while providing the performance required to run today's applications on an operating system such as Windows* 98. The Celeron processor is based on the Intel P6 architecture and includes Intel MMX™ technology. The processor core for the 266 and 300MHz parts has 7.5 million transistors. In addition, the Celeron 300A MHz and 333 MHz processors incorporate an integrated L2 cache. All Celeron processors are based on Intel's advanced 0.25 micron CMOS process technology The Celeron processor is backed by Intel's 25 years of experience in engineering and manufacturing high quality, reliable processors.

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* 98, 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. These decoded instructions are put into a buffer, which can hold up to 40 instructions. Instructions are executed from this buffer when their operands are available (versus instruction order). Up to 4 instructions can be executed per clock cycle.

- Superpipelining.

  ⇒ The pipeline of the P6 architecture 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, 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 architecture can be utilized to achieve 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. 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.

  ⇒ The 333 MHz and 300A MHz Celeron™ processors have a 128 KB full-speed, integrated L2 cache which is unified for code and data, and is non-blocking. There is a dedicated 64-bit bus to facilitate higher data transfer rates between the processor and the L2 cache.

- 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 was designed to optimize Celeron™ processor performance in the Basic PC. 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. 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 widespread use of 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.

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 five Intel microprocessors. System configurations used in iCOMP Index 2.0 measurements are listed in Appendix B.

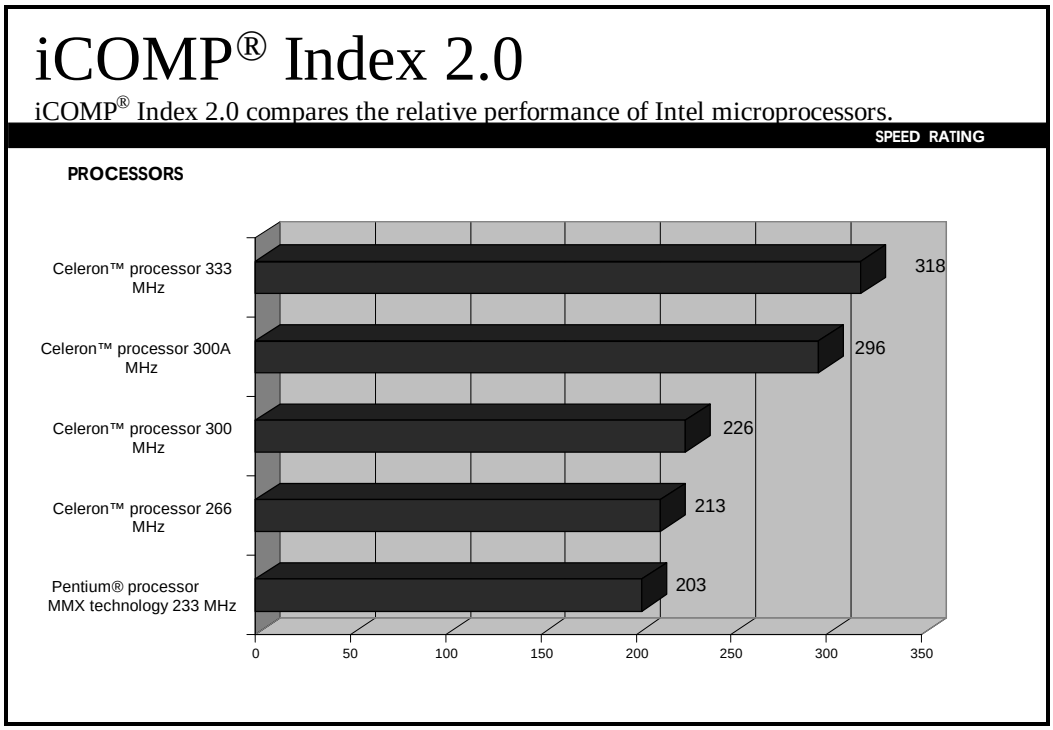

Figure 1. iCOMP® Index 2.0 Ratings for Intel Processors (System configuration for iCOMP Index 2.0 components is given in Appendix B)

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. 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 examine the complete performance of a processor or 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 applications. It incorporates audio and video playback, image processing, wave sample rate conversion, and 3D geometry.

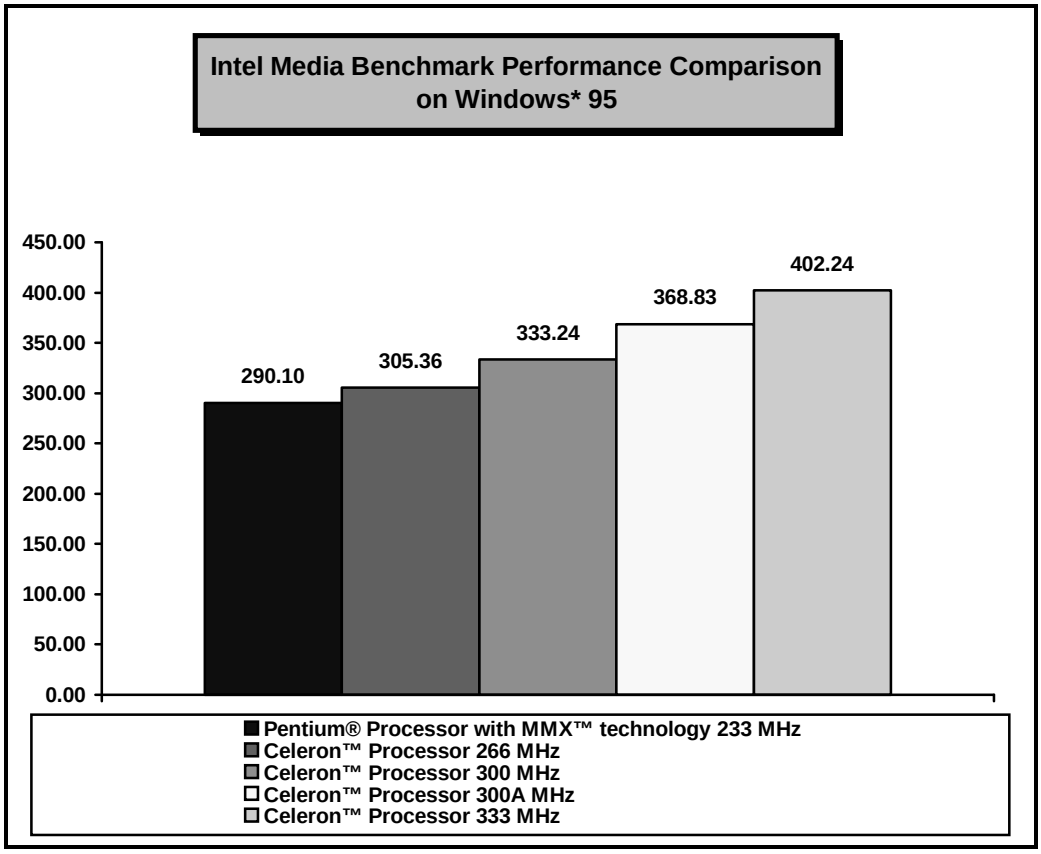

Figure 2. Intel® Celeron™ Processor Performance for the Intel Media Benchmark

Norton* Multimedia Benchmark

The Norton* Multimedia Benchmark, from Norton Utilities for Windows*95 Version 3.0, tests a system's multimedia capabilities and compares its 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.

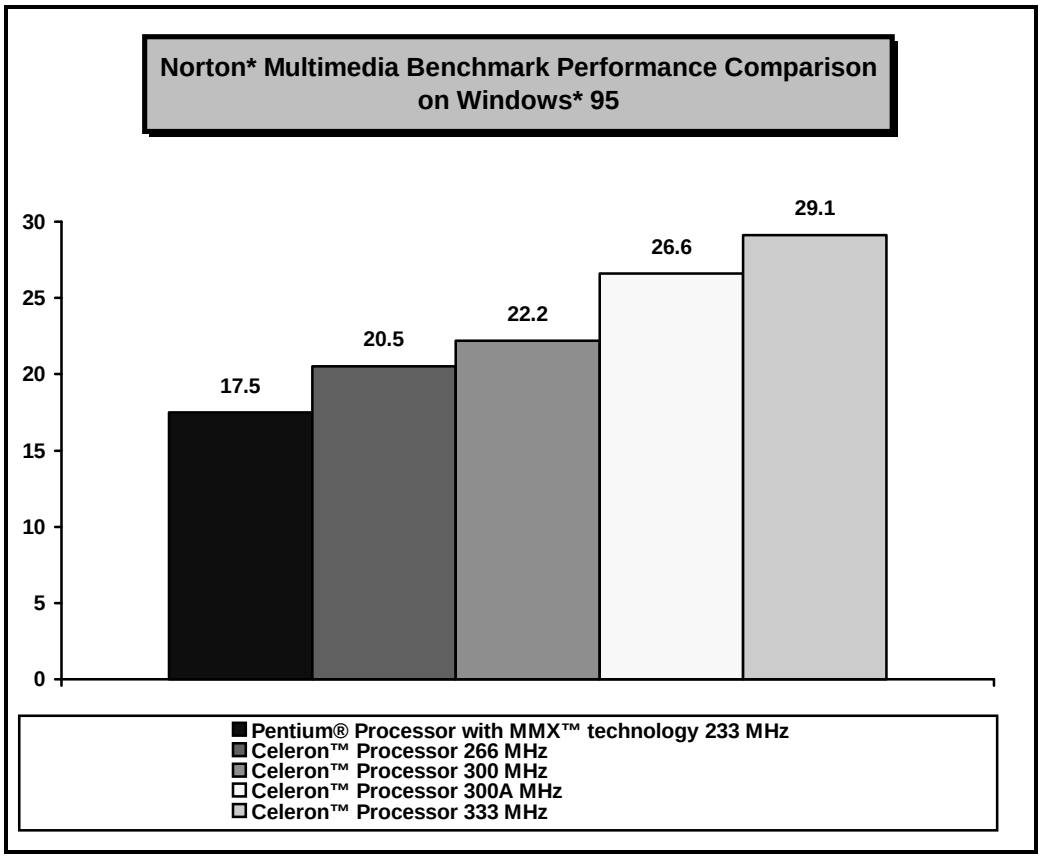

Figure 3. Intel® Celeron™ Processor Performance for the Norton* Multimedia Benchmark (See Table 4 for individual component scores from the benchmark)

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 its 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.

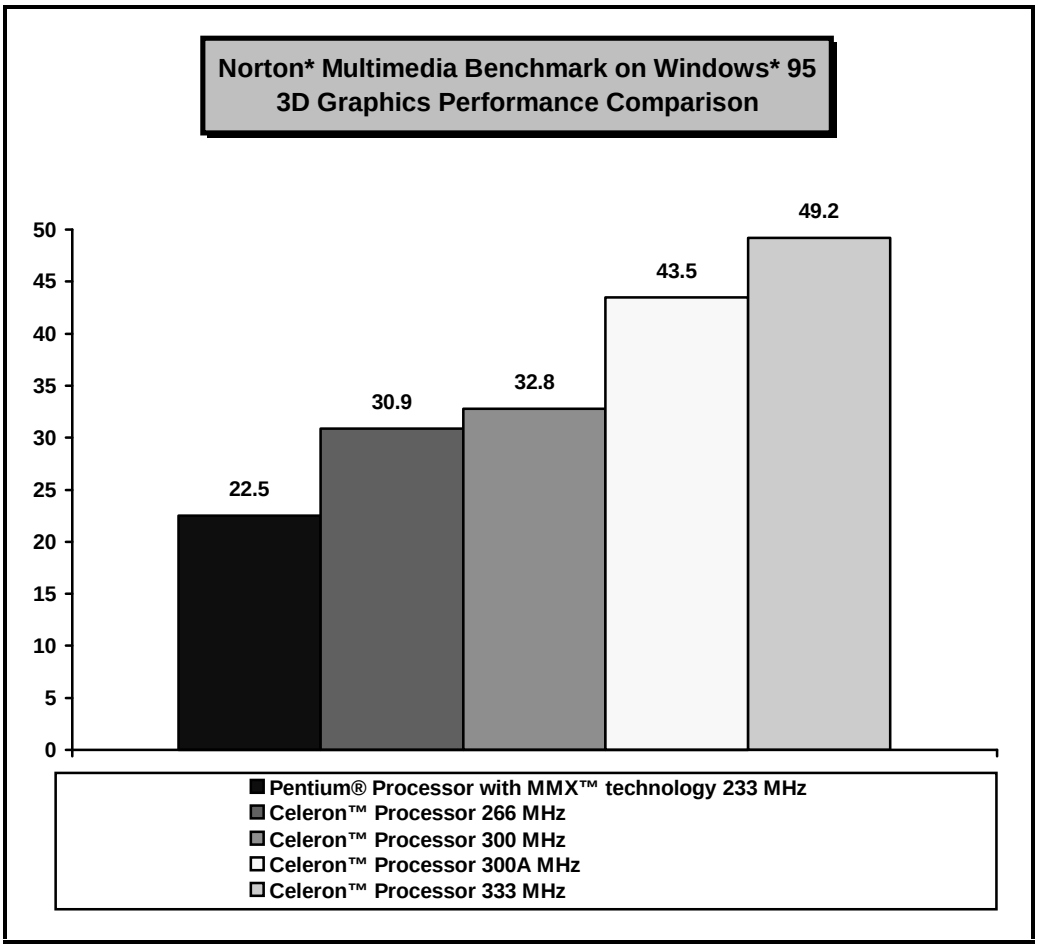

Figure 4. Intel® Celeron™ Processor Performance for the Norton* Media Benchmark – 3D Graphics

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 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 navigates through each 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 of zero is granted.

The tests below have been run using the STB Velocity 128 PCI card. The benchmark was run without the anti-aliasing tests.

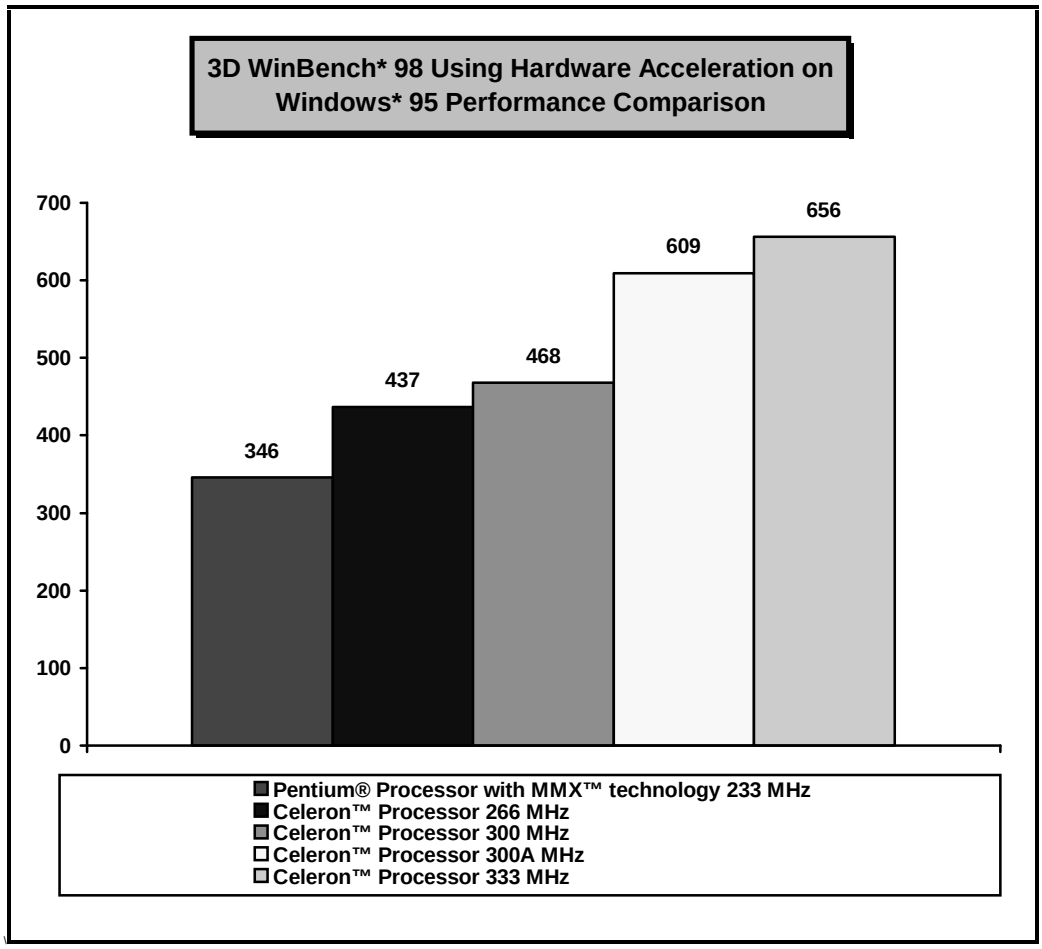

Figure 5. Intel® Celeron™ Processor Performance for the 3D WinBench* 98 (using hardware acceleration) Benchmark

FPU WinMark* Test

The FPU WinMark* Test measures the performance of the processor floating-point subsystem, which is used for such tasks as high-precision scientific calculations and 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.

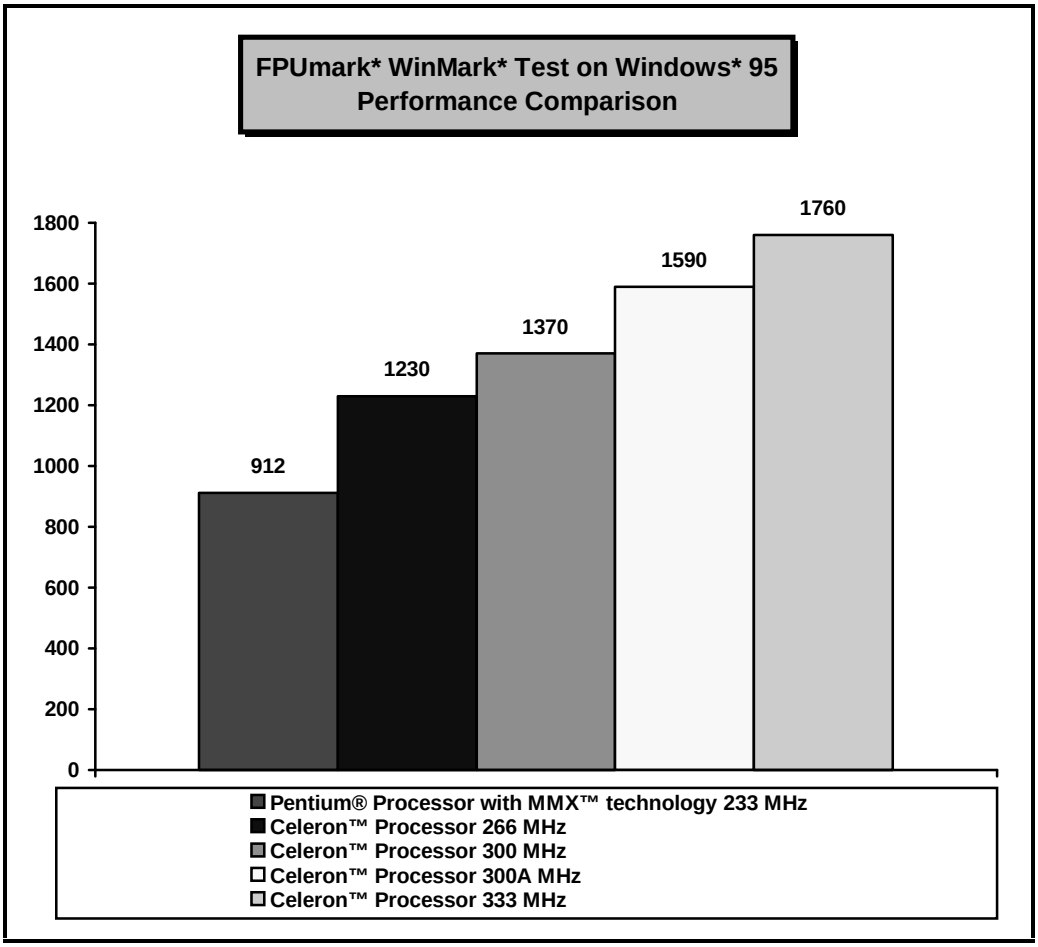

Figure 6. Intel® Celeron™ Processor Performance for FPUmark* WinMark* Test

Integer Benchmarks

Processor Level Benchmarks

Norton* SI 32

Norton* SI 32 is a 32-bit Windows* 95 benchmark designed to measure the speed of a system (CPU, L2 cache, and memory) compared to the speed of other systems on 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.

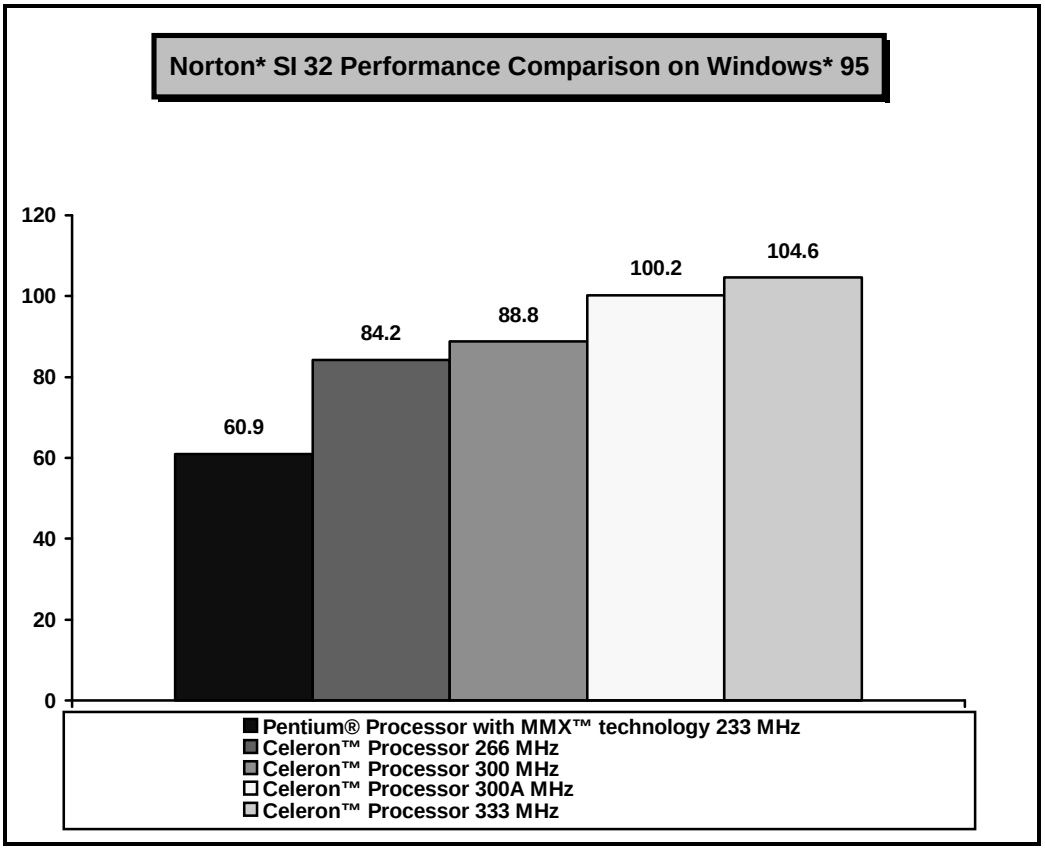

Figure 7. Intel® Celeron™ Processor Performance for the Norton* SI 32 Benchmark

CPUmark*32

CPUmark*32 is a 32-bit Windows* processor benchmark provided by Ziff-Davis* Labs.

Figure 8 illustrates Intel® Celeron™ processor performance on this popular 32-bit benchmark.

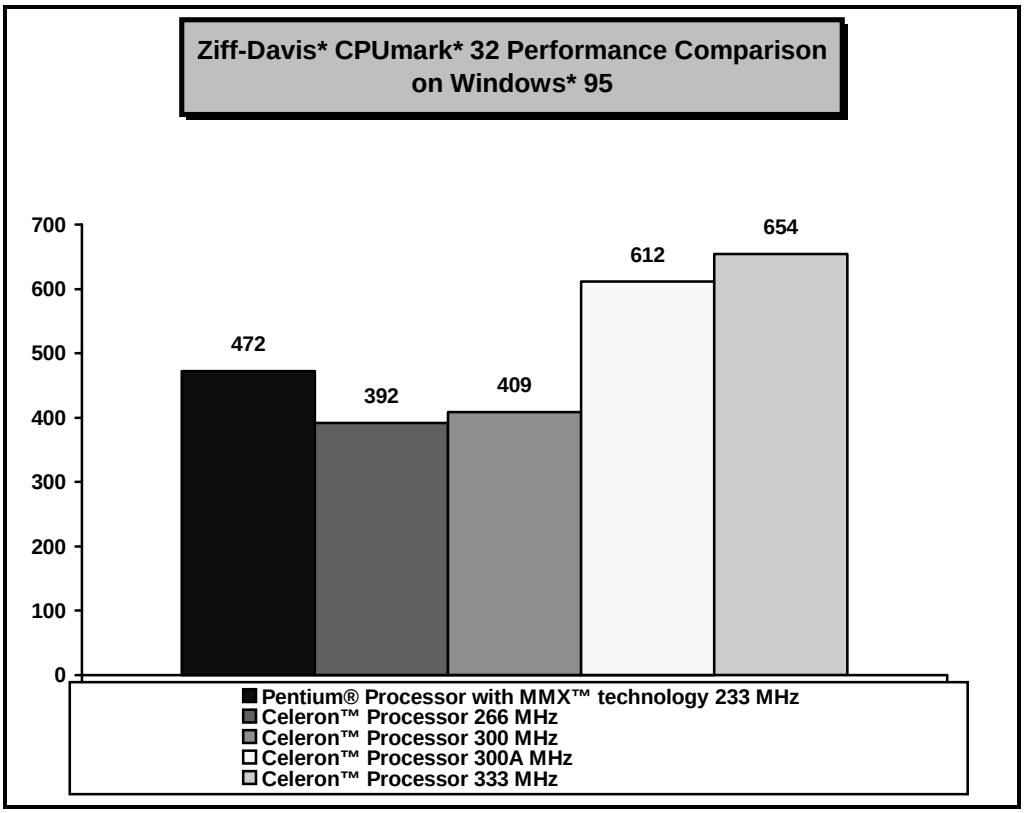

Figure 8. Intel® Celeron™ Processor Performance for the Ziff-Davis* CPUmark*32 Benchmark

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 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. It 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.

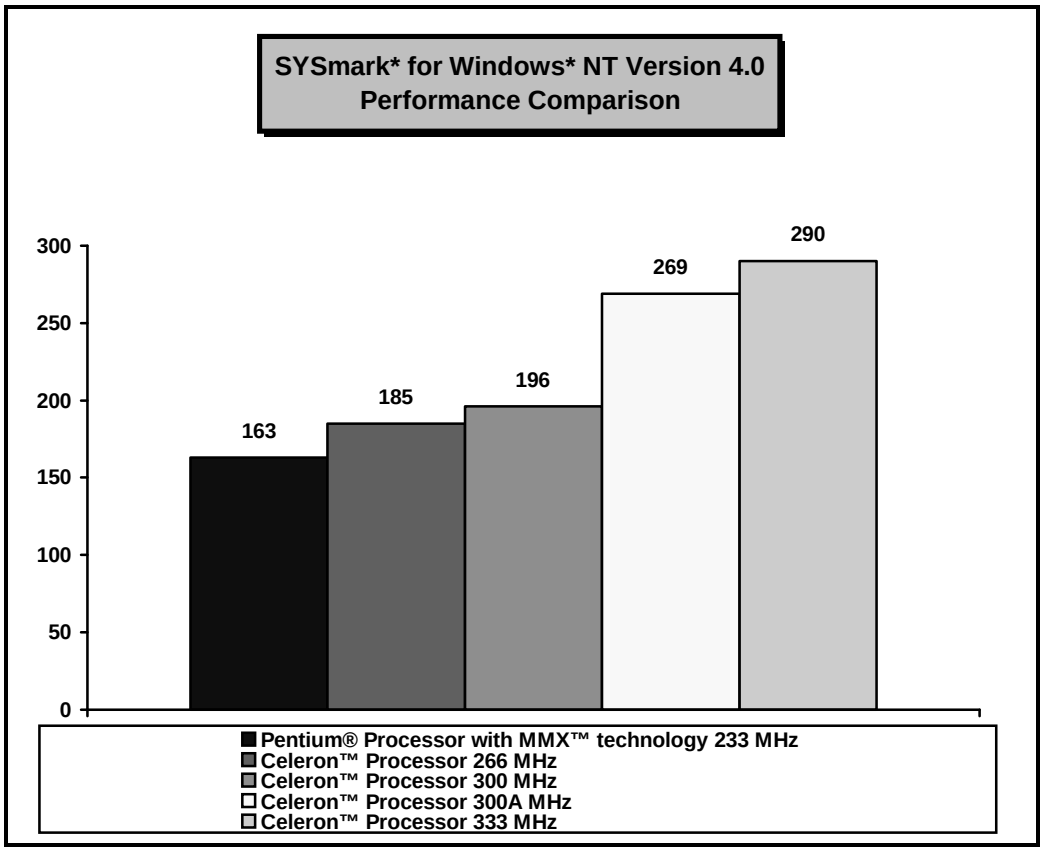

Figure 9. Intel® Celeron™ Processor Performance for SYSmark* for Windows* NT 4.0

SYSmark*32 For Windows* 95

SYSmark* 32 for Windows* 95 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.

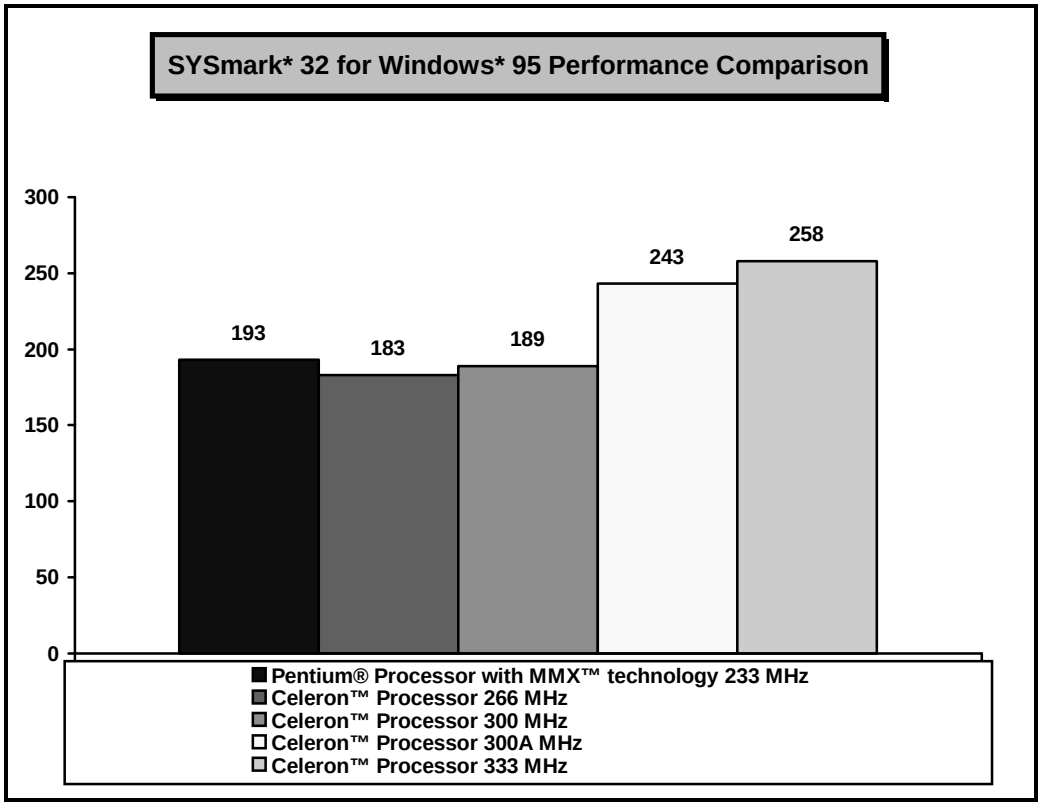

Figure 10. Intel® Celeron™ Processor Performance for SYSmark*32 on Windows* 95

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 — Microsoft Access* 97, Microsoft Excel 97, Lotus 1-2-3* 97, 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.

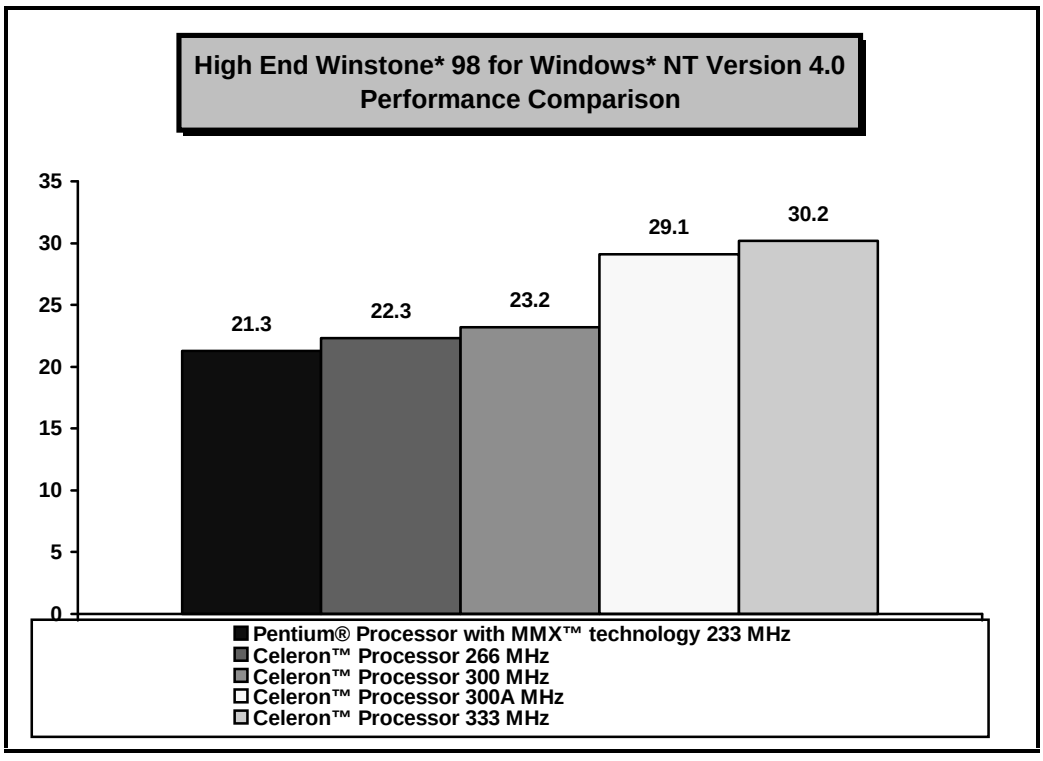

Figure 11. Intel® Celeron™ Processor Performance for Winstone* 98 High End for Windows* NT 4.0

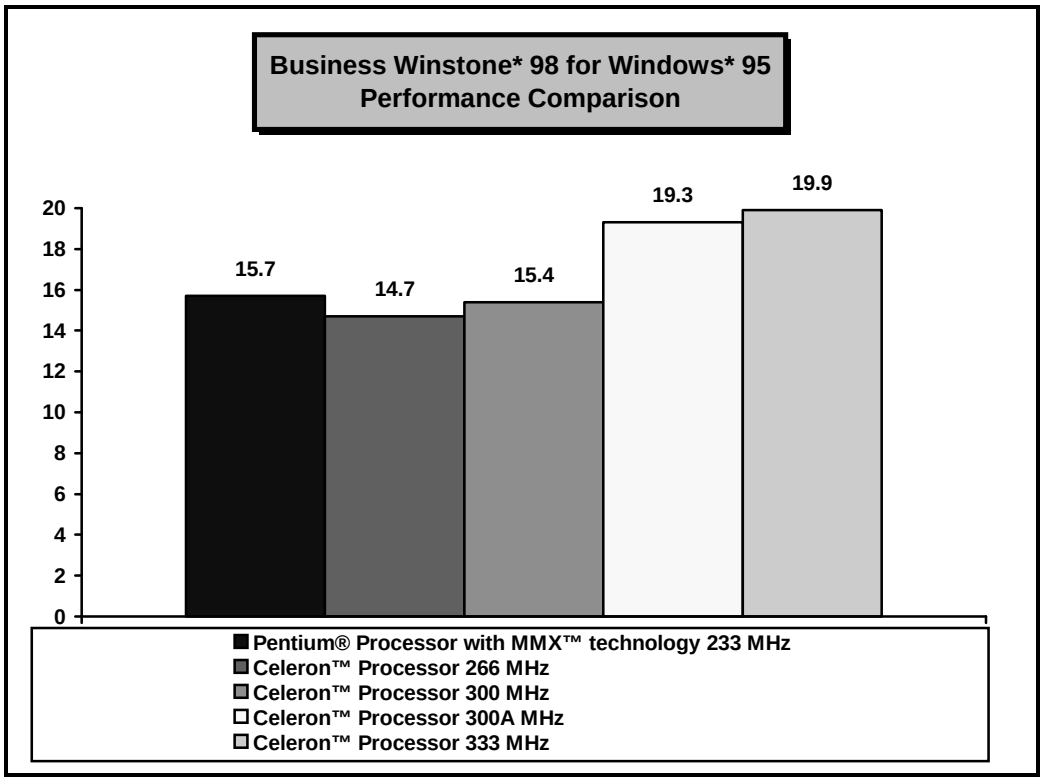

Figure 12. Intel® Celeron™ Processor Performance for Winstone* 98 Business for Windows* 95

SUMMARY

Table 1 summarizes the iCOMP® Index 2.0 performance for the Intel® Celeron™ processor family. (A higher score indicates better performance.)

Table 1. iCOMP® Index 2.0 Results

iCOMP® Index 2.0	Pentium® processor with MMX™ technology processor	Celeron™ processor			
Frequency - MHz	**233/66 MHz**	**266/66 MHz**	**300/66 MHz**	**300A/66 MHz**	**333/66 MHz**
Rating	**203**	**213**	**226**	**296**	**318**

Table 2 summarizes the performance of benchmarks for the Multimedia Benchmark vector for the Intel® Celeron™ processor family. (A higher score indicates better performance.)

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

Processor	Pentium® processor with MMX™ technology processor	Celeron™ processor			
Frequency - MHz	**233/66 MHz**	**266/66 MHz**	**300/66 MHz**	**300A/66 MHz**	**333/66 MHz**
Intel Media Benchmark/ Windows* 95	**290.10**	**305.36**	**333.24**	**368.83**	**402.24**
Norton* Multimedia Benchmark from Norton Utilities for Windows* 95 Version 3.0	**17.5**	**20.5**	**22.2**	**26.6**	**29.1**
Video	12.0	11.0	12.0	13.2	14.1
3D Graphics	22.5	30.9	32.8	43.5	49.2
Audio	24.8	26.8	30.2	33.4	34.4
CD - ROM	7.1	7.1	7.1	6.9	6.9
Imaging	30.9	43.1	46.6	52.7	56.0

Table 3 summarizes the performance of benchmarks for the Floating-Point Benchmark vector for the Intel® Celeron™ processor family (A higher score indicates better performance.)

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

Processor	Pentium® processor with MMX™ technology processor	Celeron™ processor			
Frequency - MHz	**233/66 MHz**	**266/66 MHz**	**300/66 MHz**	**300A/66 MHz**	**333/66 MHz**
Norton* Multimedia Benchmark /3D Graphics	**22.5**	**30.9**	**32.8**	**43.5**	**49.2**
Ziff-Davis* 3D WinBench* 98	**346**	**437**	**468**	**609**	**656**
WinBench* 98					
FPUmark*	**912**	**1230**	**1370**	**1590**	**1760**

Tables 4 and 5 summarize the performance of benchmarks for the Integer Benchmark vector, both processor level and system level, for the Intel® Celeron™ processor family. (A higher score indicates better performance.)

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

Processor	Pentium® processor with MMX™ technology processor	Celeron™ processor			
Frequency - MHz	**233/66 MHz**	**266/66 MHz**	**300/66 MHz**	**300A/66 MHz**	**333/66 MHz**
INTEGER BENCHMARKS - Processor Level Benchmarks					
Windows* 95					
Norton* System Index*					
Norton* SI 32	**60.9**	**84.2**	**88.8**	**100.2**	**104.6**
Ziff-Davis * CPUmark*					
CPUmark*32	**472**	**392**	**409**	**612**	**654**

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

Processor	Pentium® processor with MMX™ technology processor	Celeron™ processor			
Frequency - MHz	**233/66 MHz**	**266/66 MHz**	**300/66 MHz**	**300A/66 MHz**	**333/66 MHz**
INTEGER BENCHMARKS - System Level Benchmarks					
SYSmark*/NT/ Windows* NT 4.0	**163**	**185**	**196**	**269**	**290**
Spreadsheet	150	151	157	213	225
Project Management	178	183	191	400	435
Word Processing	152	156	163	211	224
Presentation	164	234	253	281	306
CAD	172	215	232	279	305
SYSmark*32/ Windows* 95	**193**	**183**	**189**	**243**	**258**
Publishing	167	161	163	203	214
Graphics	206	187	193	309	315
Presentation	199	188	197	259	277
Word Processing	194	184	188	235	247
Spreadsheet	191	182	189	245	264
Database	188	176	178	218	229
High End Winstone* 98/ Windows* NT 4.0	**21.30**	**22.30**	**23.20**	**29.1**	**30.2**
AVS/Express* 3.1	2.39	2.91	3.08	4.01	4.25
Microstation* 95	1.78	1.62	1.68	2.07	2.12
FrontPage* 97	2.41	2.22	2.32	3.42	3.64
Photoshop* 4.0	2.36	2.63	2.72	3.38	3.51
Adobe Premiere* 4.2	1.61	1.75	1.80	1.97	2.01
PV-wave* 6.1	2.25	2.94	3.11	4.01	4.30
Visual C++* 5.0	2.46	2.26	2.36	3.04	3.11
Business Winstone* 98/ Windows* 95	**15.7**	**14.7**	**15.4**	**19.3**	**19.9**
Browsers	2.09	1.90	1.98	2.85	2.99
Publishing	1.77	1.65	1.73	2.12	2.18
Spreadsheet/ Database	1.38	1.30	1.33	1.56	1.59
Task Switching	1.10	1.09	1.09	1.23	1.25
Word Processing	1.47	1.37	1.47	2.02	2.10

APPENDIX A — TEST CONFIGURATIONS

Processor	**Celeron™ Processor 266, 300, 300A, 333 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	266 and 300 MHz: NONE 300A and 333 MHz: 128 KB	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 Winstone* 98 and 3D WinBench* 98: Pentium® processor with MMX™ technology - ATI 3D Rage Pro/PCI based Celeron™ processor – ATI 3D Rage Pro Turbo/AGP Business Winstone* 98 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 Winstone* 98 - High End - 1024x768 Resolution, 16-bit Color For SYSmark* NT - 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 SYSmark* 32 - 1024x768 Resolution, 16-bit Color For SYSmark* 32 - 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, 300, 300A, 333 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	266 and 300 MHz: NONE 300A and 333 MHz: 128 KB	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

Processor	Pentium® Processor with MMX™ technology - 233 MHz	Celeron™ Processor 266 MHz	Celeron™ Processor 300 MHz	Celeron™ Processor 300A MHz	Celeron™ Processor 333 MHz
iCOMP® Index 2.0 Rating	**203**	**213**	**226**	**296**	**318**
Intel Media Benchmark	**293.27**	**313.64**	**342.06**	**379.45**	**413.34**
SPECfp_base*95	**4.23**	**5.51**	**5.79**	**8.30**	**8.85**
SPECint_base*95	**7.12**	**7.73**	**8.30**	**11.3**	**12.3**
CPUmark*32	**472**	**415**	**435**	**637**	**681**
Norton SI*32	**61.9**	**89.6**	**94.5**	**105.1**	**111.5**

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