

Machines are configured as follows:

#### **Intel**

- Pentium II/III 266/400/500
- QDI Brillianx B1S
- 256MB PC-100 RAM
- Voodoo 3 3000 PCI
- SoundBlaster 16 PnP ISA

#### **AMD**

- K6-III+ 550
- Gigabyte GA-5AX (rev. 4.1)
- 256MB PCI-100 RAM
- Voodoo 3 3000 AGP
- AWE32 ISA

OS used is Win98SE with Unofficial Service Pack 2.1a, IE6.0 update and DirectX 8.0  
Voodoo 3 drivers are the latest official drivers (v1.07.00) with 3Dfx Tools configured with default settings (LOD 0 etc).  
Vsync for both D3D and OpenGL was turned Off.

All games were benchmarked with highest details, unless otherwise noted. For the AMD system, Quake II was using the 3DNow! Patch.

The following games were benchmarked with internal timedemos:

- MDK2
- Shogo (using 3Fingers' RevShogo)
- Unreal Tournament (CityIntro and also using UTBench)
- Quake III (Demo 001 and Demo002)
- Quake II (Demo1 and also using 3Fingers' massive1 and crusher)
- Turok + Turok 2
- Descent 3
- Drakan

The rest of the games were tested using FRAPS (or just by looking at them for DOS games) and comparing framerate. These are:

- Mechwarrior 2
- Magic Carpet
- Half-Life Uplink

3DMark 99 Max and 3DMark 2000 were also used for benchmarking.

#### **3DMark 99 Max(800x600):**

**Pentium II 266:** 2065 3DMarks - 2659 CPU Marks

**Pentium II 400:** 3906 3DMarks - 3924 CPU Marks

**Pentium III 500:** 3991 3DMarks - 7780 CPU Marks

**K6-III+ 550:** 3535 3DMarks - 8372 CPU Marks

### **3DMark 2000:**

#### **800x600**

**Pentium II 266:** 980 3DMarks - 53 CPUMarks  
**Pentium II 400:** 1446 3DMarks - 79 CPUMarks  
**Pentium III 500:** 2584 3DMarks - 145 CPUMarks  
**K6-III+ 550:** 1894 3DMarks - 97 CPUMarks

#### **1024x768**

**Pentium II 266:** 980 3DMarks - 53 CPUMarks  
**Pentium II 400:** 1439 3DMarks - 79 CPUMarks  
**Pentium III 500:** 2455 3DMarks - 145CPUMarks  
**K6-III+ 550:** 1847 3DMarks - 97 CPU Marks

### **MDK 2 Demo (1024x768 – Full Detail):**

**Pentium II 266:** 28.2 fps  
**Pentium II 400:** 41.3 fps  
**Pentium III 500:** 50.3 fps  
**K6-III+ 550:** 37.9 fps

### **Shogo(High Detail – 16bit):**

#### **800x600:**

**Pentium II 266:** 47.807 fps  
**Pentium II 400:** 67.994 fps  
**Pentium III 500:** 69.189 fps  
**K6-III+ 550:** 57.146 (!) fps

#### **1024x768:**

**Pentium II 266:** 41.973 fps  
**Pentium II 400:** 52.200 fps  
**Pentium III 500:** 53.427 fps  
**K6-III+ 550:** 47.444 fps

### **Unreal Tournament (High Detail):**

#### **3D Accelerated (Glide):**

#### **800x600:**

**Average** **Minimum** **Maximum**

CityIntro:

**Pentium II 266:** 27.67 fps 15.62 fps 61.78 fps  
**Pentium II 400:** 40.77 fps 23.20 fps 83.82 fps  
**Pentium III 500:** 46.96 fps 26.99 fps 92.07 fps  
**K6-III+ 550:** 36.88 fps 17.88 fps 80.50 fps

#### **1024x768:**

**Average** **Minimum** **Maximum**

**Pentium II 266:** 26.92 fps 15.37 fps 61.37 fps  
**Pentium II 400:** 39.22 fps 22.82 fps 86.96 fps  
**Pentium III 500:** 45.01 fps 26.71 fps 90.95 fps  
**K6-III+ 550:** 35.99 fps 18.64 fps 79.60 fps

UTBench:

**Pentium II 266:** 18.49 fps 11.61 fps 27.64 fps  
**Pentium II 400:** 24.90 fps 16.71 fps 38.70 fps  
**Pentium III 500:** 28.03 fps 19.08 fps 41.48 fps  
**K6-III+ 550:** 26.10 fps 13.83 fps 37.40 fps

**Pentium II 266:** 17.91 fps 11.24 fps 27.72 fps  
**Pentium II 400:** 24.41 fps 13.25 fps 37.41 fps  
**Pentium III 500:** 27.22 fps 15.80 fps 44.08 fps  
**K6-III+ 550:** 25.55 fps 12.41 fps 36.83 fps

### **Software Rendered:**

#### **320x200:**

**Average** **Minimum** **Maximum**

#### **512x384:**

**Average** **Minimum** **Maximum**

CityIntro:

<u>Pentium II 266:</u>	22.43 fps	15.54 fps	44.71 fps	<u>Pentium II 266:</u>	13.59 fps	9.74 fps	26.47 fps
<u>Pentium II 400:</u>	33.79 fps	23.03 fps	65.16 fps	<u>Pentium II 400:</u>	20.85 fps	15.48 fps	39.34 fps
<u>Pentium III 500:</u>	39.45 fps	26.94 fps	71.79 fps	<u>Pentium III 500:</u>	25.12 fps	18.34 fps	46.53 fps
<u>K6-III+ 550:</u>	21.56 fps	15.24 fps	35.17 fps	<u>K6-III+ 550:</u>	16.82 fps	12.19 fps	28.71 fps

UTBench:

<u>Pentium II 266:</u>	16.60 fps	11.49 fps	23.96 fps	<u>Pentium II 266:</u>	10.94 fps	7.60 fps	14.87 fps
<u>Pentium II 400:</u>	23.84 fps	12.67 fps	33.36 fps	<u>Pentium II 400:</u>	16.35 fps	11.99 fps	21.40 fps
<u>Pentium III 500:</u>	27.67 fps	14.63 fps	39.43 fps	<u>Pentium III 500:</u>	19.43 fps	12.89 fps	25.71 fps
<u>K6-III+ 550:</u>	18.35 fps	8.82 fps	23.37 fps	<u>K6-III+ 550:</u>	14.40 fps	6.79 fps	18.13 fps

**Quake III Arena (High detail, color depth 32bit, 2<sup>nd</sup> Test Texture Quality Highest):**

**800x600:**

**1024x768:**

Demo001:

<u>Pentium II 266:</u>	29.2 fps	2 <sup>nd</sup> Test: 29.3 fps	<u>Pentium II 266:</u>	29.1 fps	2 <sup>nd</sup> Test: 28.8 fps
<u>Pentium II 400:</u>	43.2 fps	2 <sup>nd</sup> Test: 43.1 fps	<u>Pentium II 400:</u>	40.1 fps	2 <sup>nd</sup> Test: 39.1 fps
<u>Pentium III 500:</u>	52.3 fps	2 <sup>nd</sup> Test: 51.7 fps	<u>Pentium III 500:</u>	44.4 fps	2 <sup>nd</sup> Test: 42.9 fps
<u>K6-III+ 550:</u>	43.5 fps	2 <sup>nd</sup> Test: 42.9 fps	<u>K6-III+ 550:</u>	39.8 fps	2 <sup>nd</sup> Test: 38.7 fps

Demo002:

<u>Pentium II 266:</u>	28.2 fps	2 <sup>nd</sup> Test: 28.1 fps	<u>Pentium II 266:</u>	28.1 fps	2 <sup>nd</sup> Test: 27.9 fps
<u>Pentium II 400:</u>	41.9 fps	2 <sup>nd</sup> Test: 41.6 fps	<u>Pentium II 400:</u>	40.6 fps	2 <sup>nd</sup> Test: 39.7 fps
<u>Pentium III 500:</u>	51.5 fps	2 <sup>nd</sup> Test: 50.8 fps	<u>Pentium III 500:</u>	46.3 fps	2 <sup>nd</sup> Test: 44.4 fps
<u>K6-III+ 550:</u>	41.4 fps	2 <sup>nd</sup> Test: 40.6 fps	<u>K6-III+ 550:</u>	39.7 fps	2 <sup>nd</sup> Test: 38.6 fps

Note:

At 1024x768, I noticed a lot more frame drops, mainly during rocket and blood explosions. The minimum framerate, which I could not measure, was certainly far lower.

**Quake II (High Detail, 3DNow! Enabled for AMD):**

### **3D Accelerated (3Dfx OpenGL for Intel – 3Dnow! Default OpenGL for AMD)**

#### **800x600:**

#### **1024x768:**

Demo1:

**Pentium II 266:** 67.6 fps  
**Pentium II 400:** 95.0 fps  
**Pentium III 500:** 108.3 fps  
**K6-III+ 550:** 93.2 fps

**Pentium II 266:** 66.4 fps  
**Pentium II 400:** 80.6 fps  
**Pentium III 500:** 82.0 fps  
**K6-III+ 550:** 77.0 fps

Massive1:

**Pentium II 266:** 48.5 fps  
**Pentium II 400:** 69.6 fps  
**Pentium III 500:** 81.1 fps  
**K6-III+ 550:** 68.7 fps

**Pentium II 266:** 48.3 fps  
**Pentium II 400:** 65.6 fps  
**Pentium III 500:** 71.5 fps  
**K6-III+ 550:** 63.4 fps

Crusher:

**Pentium II 266:** 29.7 fps  
**Pentium II 400:** 43.0 fps  
**Pentium III 500:** 50.1 fps  
**K6-III+ 550:** 45.7 fps

**Pentium II 266:** 29.7 fps  
**Pentium II 400:** 42.6 fps  
**Pentium III 500:** 48.6 fps  
**K6-III+ 550:** 44.9 fps

### **Software Rendered (3Dnow! Software Rendered for AMD):**

#### **640x480:**

#### **800x600:**

Demo1:

**Pentium II 266:** 15.7 fps  
**Pentium II 400:** 23.2 fps  
**Pentium III 500:** 27.5 fps  
**K6-III+ 550:** 20.2 fps

**Pentium II 266:** 11.8 fps  
**Pentium II 400:** 17.5 fps  
**Pentium III 500:** 20.8 fps  
**K6-III+ 550:** 15.4 fps

Massive1:

**Pentium II 266:** 14.4 fps  
**Pentium II 400:** 21.0 fps  
**Pentium III 500:** 24.9 fps  
**K6-III+ 550:** 24.9 fps

**Pentium II 266:** 11.0 fps  
**Pentium II 400:** 16.0 fps  
**Pentium III 500:** 19.1 fps  
**K6-III+ 550:** 18.7 fps

Crusher:

**Pentium II 266:** 10.6 fps  
**Pentium II 400:** 15.5 fps  
**Pentium III 500:** 18.6 fps  
**K6-III+ 550:** 20.2 fps

**Pentium II 266:** 8.2 fps  
**Pentium II 400:** 12.0 fps  
**Pentium III 500:** 14.4 fps  
**K6-III+ 550:** 15.4 fps

### **Turok : Dinosaur Hunter (D3D, 800x600):**

**Pentium II 266:** 61.7 fps  
**Pentium II 400:** 92.6 fps  
**Pentium III 500:** 112.0 fps

**K6-III+ 550:** 91.5 fps

### **Turok 2 (Glide, 1024x768):**

**Pentium II 266:** 42.0 fps

**Pentium II 400:** 58.4 fps

**Pentium III 500:** 67.8 fps

**K6-III+ 550:** 56.5 fps

### **Descent 3 (Glide, 1024x768):**

**Pentium II 266:** avg: 56.98 fps min: 35.00 fps

**Pentium II 400:** avg: 81.83 fps min: 51.00 fps

**Pentium III 500:** avg: 87.71 fps min: 48.00 fps

**K6-III+ 550:** avg: 65.91 fps min: 42.00 fps

### **Mechwarrior II (Software, 1024x768):**

**Pentium II 266:** avg: 9.0 fps (Unplayable)

**Pentium II 400:** avg: 13.0 fps (Unplayable)

**Pentium III 500:** avg: 17.0 fps (Semi-Playable, personally too slow still)

**K6-III+ 550:** avg: 19.0 fps (Semi-Playable, personally too slow still, impressive though)

### **Magic Carpet (Software, 640x400):**

**Pentium II 266:** avg: 18.0 fps with all options off, min:13 , max: 25. (Sky effects can be turned on, the impact is too small)

**Pentium II 400:** avg: 20.0 fps with all options on except Soften, which kills performance.  
Min: 15.0 fps, Max: 30.0 fps. Reflections off also give a nice boost

**Pentium III 500:** avg: 23.0 fps with all options on except Soften, which is still too slow. Min: 18.0 fps.  
Certainly playable!

**K6-III+ 550:** With Soften off, game is unplayably fast!!! Soften on, it is kinda slow, avg: 20.0 fps, about as playable as on PII 400 with Soften off.

Note: When run on the K6-III+, Magic Carpet recognizes the CPU as a Pentium. This may turn on certain optimizations, which I could not find unfortunately. Pentium II and III CPUs were not recognized as Pentiums from the game. Still, I'm not entirely sure if there were any Pentium optimizations, despite the message.

### **Half-Life Uplink (MiniGL, 1024x768):**

**Pentium II 266:** min: 16.0 fps avg: 35.0 fps (In Large fights, avg : 23.0)

**Pentium II 400:** min: 21.0 fps avg: 45.0 fps (In Large fights, avg : 27.0)

**Pentium III 500:** min: 25.0 fps avg: 50.0 fps (In Large fights, avg : 30.0)  
**K6-III+ 550:** min: 19.0 fps avg: 42.0 fps (In Large fights, avg : 25.0)

### **Drakan : Order of the Flame (Glide):**

(All details on Highest)

#### **800x600:**

**Pentium II 266:** 25.033 fps  
**Pentium II 400:** 36.135 fps  
**Pentium III 500:** 41.141 fps  
**K6-III+ 550:** 32.299 fps

#### **1024x768:**

**Pentium II 266:** 24.027 fps  
**Pentium II 400:** 32.638 fps  
**Pentium III 500:** 35.920 fps  
**K6-III+ 550:** 27.899 fps

Thanks for reading. :-)

f2bnp