PRICEWATERHOUSECOOPERS

Report of Independent Accountants

To the Board of Directors of Advanced Micro Devices, Inc:

We have examined management's assertions included in the Advanced Micro Devices Report of Management on Processor Performance Benchmarks for the AMD Athlon™ 64 Processor 3200+ for the period from August 19, 2003 to August 22, 2003. Advanced Micro Devices, Inc.'s management is responsible for the assertions. Our responsibility is to express an opinion on management's assertions based on our examination.

Our examination was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants and, accordingly, included examining, on a test basis, evidence supporting management's assertions and performing such other procedures as we considered necessary in the circumstances. We believe that our examination provides a reasonable basis for our opinion.

It is not PricewaterhouseCoopers LLP's policy or intent to endorse the product or services of any organization.

In our opinion, management's assertions referenced above are fairly stated, in all material respects.

September 3, 2003

Advanced Micro Devices
Report of Management on Processor Performance Benchmarks
AMD Athlon™ 64 Processor 3200+

I. Benchmark Results

The management of Advanced Micro Devices, Inc. ("AMD") asserts that the following results were generated with the AMD Athlon™ 64 processor 3200+ using the benchmark tests below (a higher score indicates better performance):

Benchmark	Version	AMD Athlon™ 64 Processor 3200+ results	Units
AquaMark (1024x768x32)	2.2	107.17	FPS
BAPCO SYSmark™ 2001 Internet Content Creation*	1.0	322.33	N/A
BAPCO SYSmark™ 2001 Office Productivity*	1.0	282.33	N/A
bbmpeg (raw AVI to MPEG2)	1.24 beta 18	566.00	SEC
Comanche 4 Demo (1024x768x32)	1.0.1.18	68.89	FPS
eTesting Labs Inc. Business Winstone™ 2001	1.0.2	101.73	N/A
eTesting Labs Inc. Business Winstone™ 2002	1.0	45.00	N/A
eTesting Labs Inc. Content Creation Winstone™ 2002*	1.0.1	63.27	N/A
eTesting Labs Inc. Content Creation Winstone™ 2003*	1.0	60.77	N/A
Futuremark Corporation 3DMark™ 2001 - Second Edition (Hardware)	1.0	19562.00	N/A
Futuremark Corporation 3DMark™ 2001 - Second Edition (Software)	1.0	8551.33	N/A
Futuremark Corporation 3DMark™ 2003 - (Hardware)	3.3.0	5784.33	N/A
Futuremark Corporation 3DMark™ 2003 - (Software)	3.3.0	2424.67	N/A
Half-Life Smokin' (1024x768x32)	1.0.0.9	126.25	FPS
Quake III Demo2 (1024x768x32)	Arena demo2	381.33	FPS
RazorLame	1.1.5.1342	288.00	SEC
Return to Castle Wolfenstein 3D (1024x768x32)	1.1	138.53	FPS
Serious Sam (1024x768x32)	1.02	204.13	FPS

Serious Sam: Second Encounter - Demo Version (1024x768x32)	Demo	248.23	FPS
Splinter Cell (1_1_1)	1.2	96.18	FPS
Splinter Cell (1_1_2)	1.2	89.86	FPS
Star Wars - Jedi Knight II: Jedi Outcast (1024x768x32)	1.04	176.00	FPS
Unreal Tournament (1024x768x32)	4.36	126.07	FPS
Unreal Tournament 2003 Demo – Botmatch	1142	105.84	FPS
Unreal Tournament 2003 Demo – Flyby	1142	266.06	FPS
WinRAR	3.2	21.35	SEC
XMPEG	5.01	59.92	SEC

N/A – Indicates the benchmark score is an absolute number without units.
FPS – Frames per second.
SEC – Seconds.
*** -** Test results reflect the use of a software patch which allows the Microsoft® Windows® Media Encoder 7 codec to utilize SIMD processor instructions on the AMD Athlon™ 64 Processor 3200+. This software patch is not publicly available.

AMD installed the benchmarks using the manufacturer's CDs or downloads available from the Internet. The benchmarks were installed using the default locations and settings. Specific installation instructions, execution instructions, or changes to the default settings can be viewed by selecting the name of the benchmark above.

II. Hardware And Software Configuration

AMD Management asserts that the components listed below were used to generate the benchmarks reported. AMD Performance Marketing in Austin, Texas assembled these components for benchmarking purposes.

Component	Manufacturer	Model	Description
Processor	AMD	AMD Athlon™ 64 Processor 3200+	Processor operates at 2.0 GHz
Operating System	Microsoft©	Windows® XP Professional	Version 2002 (Service Pack 1A)
Motherboard	MSI	MS-6702	Version OE, VIA Chipset
Hard drive	Seagate	Barracuda 7200.7 120GB	Serial ATA, 7200 RPM, ST3120026AS
RAM Memory	Corsair	CMX512-3500C2	2 x 512MB PC3500 DDR DIMM, 434MHz
Network Card	RelTek	(Integrated)	(Integrated)

Component	Manufacturer	Model	Description
Sound Card	RelTek	(Integrated)	(Integrated)
Video Card	ATI	Radeon 9800	128MB
DVD-ROM	Toshiba	SD-M1212	6X/32X IDE

The BIOS used for running the benchmarks is not publicly available. The operating system was installed on the platform using an NTFS partition. The default settings were used during the installation. Select the operating system above to display changes made to the configuration after the completion of the default installation of the operating system.

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III. Testing Procedure

AMD Management asserts that the following procedures were used by Performance Marketing to test and record the benchmark results for each benchmark in Section I:

Testing Methodology

1.Ensure the configurations for a specific benchmark are configured as stated in the configuration and testing section for each benchmark. Execute the benchmark three times.

2. Perform the coefficient of variation ("CV") calculation using the three results. The CV is calculated by dividing the standard deviation of the three test results by the mean of the three test results.

3. If the result of the CV calculation is less than one percent ("1%"), then the results are within tolerance. If the result of the CV calculation is more than 1%, perform another run of the benchmark and record the results. Calculate the mean of all test results and use the three results closest to the mean and recalculate the CV. (Note: This step is performed until the result of the CV calculation is equal to or less than 1%.)

4. Take the three test results that were used to successfully pass the CV calculation requirements and calculate the average of the three. This average is documented as the reported benchmark score.

Operating System Setup

- During bootup, hit “Enter” to boot from CD-ROM
- Hit “F6” to install drivers for serial ATA
- Hit “S” to specify additional device
- Insert floppy disk with the downloaded ATA drivers
- Hit “Enter” to continue
- Choose “WINXP Promise SATA378™ Controller”
- Hit “Enter” to continue
- Hit “Enter” to continue the installation of “Windows XP Evaluation software”
- Hit “Enter” to continue setup of “XP”
- Hit “F8” to agree to license agreement
- Hit “ESC=Don’t Repair” to install fresh copy of Windows XP without repairing
- Hit “D=Delete Partition” to delete all existing partitions
- Hit “C” to create two partitions of equal size (8MB will be leftover after partitions are created)
- Hit “Enter” on new 57232 MB partition
- Select “Format the partition using the NTFS (Quick) file system” and hit “Enter”
- Click “Yes” to verify installations of serial ATA drivers
- Click “Next” to continue on “Regional and Language Options”
- Type in name and organization
- Type in valid Windows XP product key and click “Next”
- Click “Next” on “Administrator Password”
- Click “Next” on “Date and Time Settings”
- Click “Next” on “Networking Settings” to confirm “Typical Settings”
- Click “Next” on “Workgroup and Computer Domain”
- Click “Ok” to confirm display settings
- Click “Ok” to confirm new monitor settings
- Click “Next” to continue on “Welcome Microsoft Windows”
- Click “Skip” to skip “Networking Settings”
- Select “No” to not “Activate Windows” and click “Next”
- Type in user name and click “Next”
- Click “Finish”
- Open “My Computer”
- Right click on “Drive D”
- Click “Format”
- Select “Quick format”
- Click “Start”
- Click “Ok” to confirm format
- On desktop right click “My Computer”
- Select “Properties” and click the “Advanced” tab
- Click “Performance Options”
- Click “Settings” and click “Advanced”
- Click “Change for Virtual Memory”
- Select drive “C” and select “No paging file” under “Change virtual memory (paging file)”
- Click “Set”
- Select drive “D” select “Custom size”
- Type “1536” MB for “Initial Size”

- Type “3072” MB for “Maximum Size”
- Click “Set”
- Click “Ok” and restart computer
- On desktop right click “My Computer”
- Select “Properties” and click “Automatic Updates”
- Select “Turn off Automatic Updating. I want to update my computer manually”
- Click “Apply”
- Click “System Restore” and select “Turn off System Restore on all drives”
- Click “Apply”
- Click “Yes” to verify Turn Off System Restore
- On desktop right click “My Computer”
- Select “Properties” and click the “Advanced” tab
- Click “Settings” under “Performance”
- Select “Adjust for best performance”
- Click “Apply”
- Right click on task bar and select “Properties”
- Deselect “Keep the taskbar on top of other windows”
- Click “Apply”
- Open “Control Panel” and double click “Power Options”
- Select “Always On” from “Power Schemes” and select “Never” to “Turn off monitor”
- Click “Apply”
- Right click on desktop and select “Properties”
- Double click “Display”
- Click “Screen Saver” tab and select “(None)” as screen saver
- Click “Apply”

MainDisk.txt – Windows XP

- Format floppy disk
- Go to “WINXP folder” and select “FASTTX2k”, “TXTsetup.oem”, “ulsata”
- Copy selected files onto floppy disk

Install XP Service Pack 1A

- Install XP Windows Service Pack 1a Network Installation “xpsp1a_en_x86.exe” self-extracting cabinet (version 1.16.121.0)
- Click “Next” to continue
- Select “I agree” and click “Next”
- Select “Do not archive files” and click “Next”
- Click “Finish” to restart computer

Install Motherboard Drivers

- Install “VIAHyperion4in1448V.exe” chipset drivers
- Double click on the .exe file
- Click “Next” to start install
- Click “Yes” to agree to license
- Select “Normal installation” and Click “Next”

- Click “Next” to install default components
- Select “Install VIA PCI IDE Bus Driver” and click “Next”
- Select “Install AGP driver” and click “Next”
- Select “Yes, I want to restart the computer” and click “Ok”

Sound Card Setup

- Extract sound files to any directory
- Double click “setup.exe” file
- Click “Next” to begin installation
- Click “Finish” to complete
- Select “Yes, I want to restart the computer” and click “Ok”

Ethernet Card Setup

- Extract files to any directory
- Right click on “My Computer”
- Click on “Hardware” Tab and select “Device Manager” button
- Right Click on “Ethernet Controller” and select “Update driver”
- Select “Install from a list or a specific location” and click “Next”
    - Select “Best driver in these locations”,
    - Click on both boxes and enter the directory where files were extracted
    - Click “Ok”
- Click “Next” to continue
- Select “Continue Anyway” when asked for continuance of installation
- Click “Finish” to complete installation

Install DirectX 9.0A

- Install “DirectX 9A_redist.exe” from CD
- Click “Yes” to accept “License Agreement”
- Click “Unzip” to specified location (for example c:\dX9) and click “Unzip”
- Install DirectX from “c:\dX9\dxsetup.exe”
- Click “Next” to accept “License Agreement”
- Click “Next” to install DirectX 9.0
- Click “Finish” to restart computer
- (Note: DX9.0A must be installed before video card setup)

Video Card Setup

- Install file from download, “wxp-w2k-catalyst-7-91-030625a-010027c-efg.exe”
- Double click on the .exe file
- Click “Next” to begin installation
- Click “Next” to confirm location of the file
- Click “Yes to All” to overwrite protection (if dx9 was not setup before video)
- Click “Next” to install shied wizard
- Click to “Yes” to agree to license
- Click on “Express” Installation

- Click “Yes” to restart computer
- Right click on desktop and select “Properties” sub menu item
- Choose “Settings” tab
- Change “Screen Resolution” to “1024 by 768 pixels”
- Click “Apply” to implement settings
- Click “Yes” to save settings
- Click “Advanced” button on settings tab
- Choose “Monitor” tab and choose “85 Hertz” for “Set Screen Refresh”
- Choose “Display” tab
- Set “Maximum Resolution” to “1024 by 768”
- Set “Maximum Refresh” to 85 Hz
- Click on “Open GL” tab
- Change “Wait for Vertical Sync” to “Always Off”
- Click on “Direct3D” tab
- Change “Wait for Vertical Sync” to “Always Off”
- Click “Apply” and “Yes” to save settings
- Click “Ok” to close all dialog boxes

AMD SSE setup for Windows Media Encoder

- During bootup, hit “F8” to go into Safe Mode
- Replace “wmvdmoe.dll” in c:\ WINDOWS\system32
- Click “Yes” to “replace existing file”

DXDIAG

- Run “DXDIAG” from the command line
- Click “Yes” to run DirectX Diagnostic Tool
- Select the “More Help” tab
    - Click “Override” and select “Override Value” type “85”
    - Click “Ok”
- Click “Exit” and restart computer
- Deselect “Show this screen next time you start Windows” when “Desktop Help for ATI” window appears

WCPUID v3.1 Setup

- Download “wcpuid v3.1” from http://www.h-oda.com
- Install “wcpuid31Ao c:\wcpuid”
- Run “c:\wcpuid\wcpuid.exe”
- Ensure that “AGP Data Rate” is set to “8x” (under Chipset Info)

BIOS Configuration

*Note: The BIOS used for running the benchmarks is not publicly available.

A6702VMS Version 1.0BA 071103

(The following text in bold represents a menu, which is selected, text in italics represents an action, which can be performed within a menu).

- **Standard CMOS Features**
  - *System Date: August 19, 2003 Tue*

- **Advanced Chipset Features**
  - *CAS Latency – CL2.0*
  - *AGP Aperture Size – 256MB*

- **PNP/PCI Configurations**
  - *Plug and Play Aware O/S – Yes*

- **Integrated Peripherals**
  - *Serial Port 1 – Disabled*
  - *Serial Port 2 – Disabled*
  - *VT8327 SATA – IDE Controller – Disabled*
  - *Onboard Lan Controller – Enabled*
  - *Onboard Promise S.ATA – SATA*

- **Save and Exit Setup**
  - *Enter To Continue*

IV. Benchmark Configuration and Testing

AquaMark (1024x768x32)

- Install AquaMark: AquaMark_22.exe (version 0.4455.0.0)
- Click "Next" to install AquaMark
- Click "Next" for "Read Me File"
- Click "Next" to install to default "Destination Location"
- Click "Next" to install to default "Program Manager Group"
- Click "Next" to "Start Installation"
- Click "Finish" to complete installation

To run the benchmark:

- Execute "AquaMark" from Windows "Start" Menu
- Choose "Programs" and "AquaMark"
- Hit "Enter" to launch test

BAPCO SYSmark™ 2001 Internet Content Creation and Office Productivity

(Results for both Internet Content Creation and Office Productivity are generated during each run of the benchmark)

- Install SM2001CD1.exe, unzip to default directory and unzip
- Install SM2001CD2.exe, unzip to default directory, unzip, and select "Finish"
- Run setup to install SYSmark 2001: "c:\sm2001src\setup.exe"

- Click “Next” to install SYSmark 2001
- Click “Yes” to accept “License Agreement”
- Click “Next” to confirm “Customer Information”
- Click “Next” to install to default “Destination Location”
- Click “Next” to install to default “Program Folder”
- Click “Yes” to move the program files to the alternate key
- Click “Finish” to complete installation
- Install SYSmark 2001 patch: “SYSmark2001Patch3.exe”
- Click “Yes” to install SYSmark 2001Patch 3
- Click “Finish” to complete patch installation
- Execute “Netscape” from desktop
- Click “Ok” to acknowledge “Alert”
- Click “Ok” to acknowledge “Alert”
- Click “View” and deselect “My Sidebar”
- Click “Edit” and select “Preferences”
- Click “Blank Page” under “When Navigator starts up, display” and click “Ok”
- Close “Netscape”
- Execute Windows Media Encoder: “c:\sm2001src\MediaEnc.exe”
- Click “Yes” to accept “License Agreement”
- Click “Next” to install Windows Media Encoder 7
- Click “Finish” to install default “Installation Directory”
- Click “Yes” to create “Program Folder”
- Select “Exit Setup” and click “Ok”

To run the benchmark:

- Execute SYSmark 2001 from Windows “Start” menu
- Click “Run”
- Click on “Official Run”
- Type project name and click “Ok”

bbmpeg (raw AVI to MPEG2)

- Open folder “bbmpg12418”
- Extract “bbmpg12418.exe” to c:\bbmpg folder onto the desktop
- Copy “AustinMontageLong.avi” to desktop
- Execute “avimpg2” from c:\bbmpg
- When the dialog box opens do the following:
    - Click “ADD” and choose “AustinMontageLong” from desktop
    - Click “MPEG filename”
        - Type filename “testfile”
        - Click “Save” to continue
    - Unclick “Preview with frame operations”
    - Click “Start Encoding” and then “Settings”
        - Under “General Settings” tab, change “MMX modes” to “*SSE-fastest” (Pentium III and Athlon)
        - Under “Video Stream Settings”, click on “MPEG-2” and Click “Ok”

To run benchmark

- Click “Start” immediately after the above step

Comanche 4 Demo (1024x768x32)

- Install Comanche 4: C4DEMOX.exe
- Click “Next” to install Comanche 4
- Click “Yes” to accept “License Agreement”
- Click “Next” to install to default “Destination Location”
- Click “Finish” to complete installation

To run the benchmark:

- Execute Comanche 4 Demo Benchmark Test
- Select “Disable Audio”
- Select “1024x768” for “Screen Resolution”
- Creates an output file. Rename it to “Comanche Run 1”
- (For the first time run, the system performs a system check)
- Click “Run Benchmark”
- Click “Ok” to select “Video Card”
- Click “Ok” for “Resolution Test”
- Click “Ok” for “Resolution Test Complete”

eTesting Labs Inc. Business Winstone™ 2001

- Click “Business Winstone™ 2001” and click “Next” to install
- Click “Next” to install in default “Destination Location”
- Click “Yes” to create directory
- Select “Copy Business support files” and click “Next”
- Click “Next” to install in default “Program Folder”
- Click “Next” to “Start Copying Files”
- Click “Finish” to complete setup

To run the benchmark:

- Select Ziff Davis Media Benchmarks from Windows “Start” menu.
- Choose “Ziff Davis Media Business Winstone 2001”
- Click “Proceed” to accept “License Agreement”
- Click “OK” to accept “Business Winstone Registration License Agreement”
- Click “Run” Business Winstone 2001
- Click “Next” to run “System Configuration Problem analysis”
- Click “Next” for “Minimum Resource Requirements”
- Click “Next” for “Other Requirements”
- Click “Next” for “Other Requirements”
- Click “Next” for “Other Requirements”
- Click “Next” for “Business Winstone Requirements”
- Click “Finish” for “System Configuration Problem”

- Click “Ok” for “Automated Defrag”

eTesting Labs Inc. Business Winstone™ 2002

- Click “Business Winstone™ 2002” and click “Next” to install
- Click “Next” to install in default “Destination Location”
- Click “Yes” to create directory
- Select “Copy Business support files” and click “Next”
- Click “Next” to install in default “Program Folder”
- Click “Next” to “Start Copying Files”
- Click “Finish” to complete setup.

To run the benchmark:

- Execute “PC Magazine Benchmarks” from Windows “Start” menu
- Choose “PC Magazine Business Winstone 2002”
- Click “Proceed” to accept “License Agreement”
- Click “Yes” to accept “Business Winstone Registration License Agreement”
- Click “Run” Business Winstone 2002
- Click “Next” to run “System Configuration Problem analysis”
- Click “Next” for “Minimum Resource Requirements”
- Click “Next” for “Other Requirements”
- Click “Next” for “Other Requirements”
- Click “Next” for “Other Requirements”
- Click “Next” for “Business Winstone Requirements”
- Click “Finish” for “System Configuration Problem”
- Click “Ok” for “Automated Defrag”

eTesting Labs Inc. Content Creation Winstone™ 2002

- Click “Content Creation Winstone 2002” and click “Next” to install
- Click “Next” to install in default “Destination Location”
- Click “Yes” to create directory
- Select “Copy Content Creation support files” and click “Next”
- Click “Next” to install in default “Program Folder”
- Click “Next” to “Start Copying Files”
- Click “Finish” to complete setup

To run the benchmark:

- Execute “Ziff Davis Media Content Creation Winstone 2002” from Windows “Start” menu
- Choose “Ziff Davis Media Content Creation Winstone 2002”
- Click “Proceed” to accept “License Agreement”
- Click “Yes” to accept “Content Creation Winstone 2002 Registration License Agreement”
- Click “Run” Content Creation Winstone 2002
- Click “Next” to run “System Configuration Problem analysis”
- Click “Next” for “Minimum Resource Requirements”
- Click “Next” for “Other Requirements”

- Click “Next” for “Other Requirements”
- Click “Next” for “Other Requirements”
- Click “Next” for “Content Creation Winstone Requirements”
- Click “Finish” for “System Configuration Problem”
- Click “Ok” for “Automated Defrag”

eTesting Labs Inc. Content Creation Winstone™ 2003

- Click “Content Creation Winstone 2003” and click “Next” to install
- Click “Next” to install in default “Destination Location”
- Click “Yes” to create directory
- Select “Copy Content Creation support files” and click “Next”
- Click “Next” to install in default “Program Folder”
- Click “Next” to “Start Copying Files”
- Click “Yes” to install Windows Media Encoder 7.1
- Click “Yes” to accept “License Agreement”
- Click “Next” to install Windows Media Encoder 7.1
- Click “Finish” complete installation
- Click “Yes” to create “Windows Media Encoder directory”
- Select “Exit Setup” and click “Ok”
- Click “Ok” to complete setup
- Click “Finish” to complete setup
- Double Click Install patch for Windows Media Encoder: WM312125.exe
- Click “Yes” to accept “License Agreement”

To run the benchmark:

- Execute “PC Magazine Media Content Creation Winstone 2003” from “Start” menu
- Choose “PC Magazine Business Winstone 2003”
- Click “Proceed” to accept “License Agreement”
- Click Yes to acknowledge you have read the license agreement
- Click “Run” Multimedia Content Creation Winstone 2003
- Click “Next” to run “System Configuration Problem analysis”
- Click “Next” for “Minimum Resource Requirements”
- Click “Next” for “Other Requirements”
- Click “Next” for “Other Requirements”
- Click “Next” for “Other Requirements”
- Click “Next” for “Content Creation Winstone Requirements”
- Click “Finish” for “System Configuration Problem”
- Click “Ok” for “Automated Defrag”

Futuremark Corporation 3DMark™ 2001 - Second Edition

- Click “Next” to install 3Dmark2001 SE Pro
- Enter Registration code and click “Next”
- Click “Ok” registration code confirmation
- Click “Yes” to accept “License Agreement”
- Click “Next” to install to default “Destination Location”

- Click “Next” to start “Coping Files”
- Click “Finish” to complete installation
- Install patch: 3Dmark2001SE_patch.exe (Version 2.11.15.0)
- Click “Next” to install 3Dmark2001 SE patch
- Click “Ok” to confirm installation

To run the software benchmark:

- Execute “3Dmark2001 SE Pro”
- Click “Change” in “Display and CPU Settings”
- Select “D3D Software T&L” under “Rendering Pipeline”
- Click “Ok”
- Click “Change” under “Selected Test”
- Select only the first four game tests under “Game Performance”
- Deselect the remaining test
- Click “Ok”
- Click “Benchmark” to launch test

(Note: After each run, exit and restart the program)

To run the hardware benchmark:

- Execute “3Dmark2001 SE Pro”
- Click “Change” in “Display and CPU Settings”
- Ensure that “Double buffering” is set to “Enabled”
- Select “D3D Hardware T&L” under “Rendering Pipeline”
- Click “Ok”
- Click “Change” under “Selected Test”
- Select only the first four game tests under “Game Performance”
- Deselect the remaining test
- Click “Ok”
- Click “Benchmark” to launch test

(Note: After each run, exit and restart the program)

Futuremark Corporation 3DMark™ 2003

- Execute 3DMark 2003: mg-3dmark03.exe (version 7.1.100.1248)
- Click “Next” to install 3Dmark03
- Select “I accept the terms of the license agreement” and click “Next”
- Click “Next” to install to default “Destination Location”
- Click “Install” to “Install the Program”
- Enter registration code and click “Next”
- Click “Ok” registration code confirmation
- Click “Finish” to complete installation
- Install patch 3Dmark03_patch330.exe (version 7.1.100.1248)
- Click OK for information box about DX9 install
-

- Click “Next” to install 3Dmark2001 SE patch
- Click “Finish” to confirm installation

To run the software benchmark:

- Execute “3DMark03”
- Select “Do not show this dialog again” and click “Close”
- Click “Select” under “Tests”
- Select first four games under “Game Test” and deselect the other test
- Click “Ok”
- Click “Change” under “Settings”
- Click “Force Software Vertex Shaders” box
- Click “Ok”
- Click “Run 3Dmark”

To run the hardware benchmark:

- Execute “3DMark03”
- Click “Select” under “Tests”
- Select first four games under “Game Test” and deselect the other test
- Click “Ok”
- Click “Run 3Dmark”

Half-Life Smokin' (1024x768x32)

- Click “Install Half-Life” and click “Yes”
- Click “Next” to install Half-Life
- Click “Yes” to accept “License Agreement”
- Click “Next” to install to default “Destination Location”
- Click “Ok” to begin setup
- Click “Ok” to complete setup
- Click “No” to not check for available updates
- Click “Ok” to register now and click “Register Later”
- Click “Next” “Select Components”
- Click “Finish” to complete setup
- Go to Windows “Start” menu and select “Halflife”
- Click on “Don’t show me again”
- Click “Continue” to acknowledge compatibility issue
- Type in registration code and click “Finish”
- Execute “Half-Life Console”
- Click “Configuration,” “Video,” and “Video Modes”
- Select “Open GL” and click “Ok”
- Click “Cancel” for “New Connection Wizard”
- Select “1024x768” and click “Ok”
- Click “Done” to exit video menu
- Click “Done” to exit menu
- Click “Quit” to exit game
- Click “Ok” to confirm exit

- Install Half-Life patch: “10051009.exe”
- Click “Next” to install Half-Life Update 1.0.0.9
- Click “I Agree” to accept “License Agreement”
- Click “Next” for “Read Me File”
- Click “Next” to install to default “Destination Location”
- Click “Next” to “Start Installation”
- Click “Next” to place shortcut on desktop
- Click “Finish” to compete installation
- Move “smoking.dem” to “c:\SIERRA\Half-Life\valve\”
- Move the maps folder to “c:\SIERRA\Half-Life\valve\”

To run the benchmark:

- Insert CD in CD-Rom
- Execute “Half-Life Console” from start menu
- Click “Console”
- Eject CD from CD-Rom so that music does not play
- Type “timedemo smoking”
- Hit “Enter” to launch demo

Quake III Demo2 (1024x768x32)

- Install Quake III: Q3Ademo.exe
- Click “Next” to install Quake 3 Arena Demo
- Click “Yes” to accept “License Agreement”
- Click “Next” to install to default “Destination Location”
- Click “Next” to install
- Click “Close” to complete setup

To run the benchmark:

- Execute “Quake3” from desktop
- Click “Setup”
- Click “System”
- Click “Video Mode” to select “1024x768”
- Click “Color Depth” to select “32 Bit”
- Click “Accept”
- Hit "~" for console command view
- Type the following commands to configure and run the demo:
    - “s_initsound 0”
    - “snd_restart”
    - Hit “~”
    - “com_maxfps 0”
    - “vid_restart”
    - Hit “~”
    - “timedemo 1”
    - “demo demo002”
- Hit “Enter” to launch demo
- Hit "~" to view results

RazorLame

- Install “ezcddax6.exe” to convert ripping CD to wav format
- Click “Next” to continue ripping from “Easy CD-DA Extractor Setup”
- Click “Next” to install program into default folder
- Click “Finish”
- Insert “Pink Floyd - Wish You Were Here” Digital Remaster 1992 Audio CD into drive. (CD Control number: CDP 7243 8 29750 2 1)
- Go to “Start”, “Programs”, “Easy CD-DA Extractor 6”, “Easy CD-DA Extractor”
- Click “Evaluate the Software”
    - Select “Device” to “Hitachi GD-2000 1000” to reflect the CDROM is installed on the computer
    - Select all tracks
    - Click “Copy” to continue
    - In the dialog box, Change output folder to “C:\Pink Floyd”
    - Go to “Integrated Formats” tab, choose “.wav (standard)” in the first drop down box
    - Click “Start Copying” to copy files
- Burn the raw files to another CD
- Input the burned CD into the computer
- Choose folder “Pink Floyd”
- Copy folder from CD to desktop
- Install “lamewin32”
- Click “I Agree” to license agreement
- Click “Next” to install “LAME Mp3”
- Click “Install” to continue install
- Clicks “Close”
- Open “Razor Lame” shortcut on desktop
- Drag the “Pink Floyd” folder track items into “Razor Lame 1.1.5”
- Go to “Edit” menu, Choose “Lame Options”
    - Under “General” tab “Increase Bit rate” to “192”
    - Under “Advanced” tab, change “Optimization” to “Quality”
    - Under “VBR” tab, “Enable” “Variable BitRate” and change “Quality Number” to “9”
    - Click “Ok” to close dialog box

To run the benchmark:

- Click “Encode” to run benchmark
- To view results, Go to “View”, “Last log”, scroll down to end of file

Before running a second run, delete all files from the Razor Lime and re-copy prior to starting run. Don’t need to reset options.

Return to Castle Wolfenstein 3D (1024x768x32)

- Click “Install” and click “Next” to install Return to Castle Wolfenstein
- Click “Yes” to accept “License Agreement”
- Click “Next” for “Minimum System Requirements”
- Enter registration key and click “Ok”
- Click “Ok” to confirm registration key
- Click “Next” to install to default “Destination Location”

- Click “Next” to install to default “Program Folder”
- Click “Install” to “Start Installation”
- Click “Ok” for “Hardware Detected”
- Click “Yes” to create shortcut on desktop
- Select “Register Later” and click “Next”
- Click “Finish” to complete setup
- Install patch: “wolf_1_1.exe”
- Click “Next” to install Return to Castle Wolfenstein Patch
- Click “Yes” to accept “License Agreement”
- Click “Next” to install to default “Destination Location”
- Click “Next” to “Start Installation”
- Click “Ok” to continue installation
- Click “Finish” to complete installation
- Create a directory called “demos” in the “c:\Program Files\Return to Castle Wolfenstein\Main\Demos” and extract “checkpoint.dem_57” to that directory
- Execute “Wolfenstein (Multiplayer)” from desktop
- Click “Options,” “System,” and “Graphics”:
- Select “Video mode” to “1024x768”
- Select “Texture detail” to “High”
- Click “Apply”
- Click “Yes” to apply video settings
- Under “Options,” “Game Options,” and “Performance”:
    - Select “Wall Mark Lifetime” to “Long”
    - Select “Ejecting Brass” to “High”
    - Select “Dynamic Lights” to “Yes”
    - Select “Corona Dist” to “Extreme”
- Under “Options/Game Options/View”:
    - Select “Cursor Hints” to “Off”
    - Select “Show Compass” to “Off”
    - Select “Team Overlay” to “Off”
- Hit “Esc” to return to main menu
- Click “Quit” to exit game

To run the benchmark:

- Execute “Wolfenstein (Multiplayer)” from desktop
- Go into “Options,” “Game Options,” “Performance,” and set “Corona Dist” to “Extreme”
- Hit "~" to open console
- Type “Timedemo 1”
- Type “Demo checkpoint”
- Type "~" to view demo results

Serious Sam (1024x768x32)

- Click “Install” and click “Next” to install “Serious Sam: First Encounter”
- Click “Yes” to accept “License Agreement”
- Click “Next” for “Information text”
- Click “Next” to install to default “Destination Location”

- Click “Next” to install to default “Setup Type”
- Click “Next” to install to default “Program Folder”
- Click “Next” to install default name for “Enter Text”
- Click “Finish” to complete installation
- Install patch for Serious Sam: “Serioussampatch102_USA.exe”
- Click “Ok” to choose language setup
- Click “Next” to install Update to version 1.02 for “Serious Sam: The First Encounter”
- Click “Finish” to complete setup
- Insert Serious Sam CD into CD-Rom
- Execute Serious Sam
- Click “Ok” to start Serious Sam for the first time
- Hit “Esc” to enter main menu
- Click “Options,” and “Video Options”
    - Select “Resolution” to “1024x768”
    - Select “Bits per pixel” to “32”
    - Select “Preferences” to “Speed”
- Click “Apply”
- Click “Yes” to keep settings
- Click “Esc” to return to main menu

To run the benchmark:

- Execute Serious Sam from desktop
- Hit "~" to launch console
- Type “dem_bprofile=1”
- Press "~" to return to main menu
- Click “Demo”
- Select “Karnak Peaceful Night Coop” demo and hit “Enter”
- Type "~" and scroll up to view demo results (use the score that is labelled “average without excessive peaks”)

Serious Sam: Second Encounter - Demo Version (1024x768x32)

- Double Click to Install Serious Sam: “serioussamsedemo.exe”
- Click “Next” to install Serious Sam: The Second Encounter Demo
- Click “Yes” to accept “License Agreement”
- Click “Next” for “Information text”
- Click “Next” to install to default “Destination Location”
- Click “Next” to install to default “Program Folder”
- Click “Next” to install default name for “Enter text”
- Click “Finish” to complete installation
- Execute Serious Sam
- Click “Ok” to start Serious Sam for the first time
- Hit “Esc” to enter main menu
- Click “Options,” and “Video Options”
- Select “Resolution” to “1024x768”
- Select “Bits per pixel” to “32”
- Select “Preferences” to “Speed”

- Click “Apply”
- Click “Yes” to keep settings
- Click “Esc” to return to main menu

To run the benchmark:

- Launch Serious Sam Second Encounter demo from desktop
- Hit ESC to get to main menu
- Hit "~" to enter console
- Type “dem_bprofile=1”
- Hit "~" to return to main menu
- Click “Demo”
- Select “Little Trouble” demo and hit “Enter”
- Following the demo, hit "~"

Splinter Cell

- Install Splinter Cell from CD
- Click “Next” to continue
- Click “No” to update current version of DX9.0
- Click “Next” to accept license agreement
- Click “Next” to continue
- Click “Next” to continue
- Click “Next” to continue
- Insert Disc 2 and click “OK”
- Insert Disc 3 and click “OK”
- Click “Next” to continue
- Chose “Never Register” and Click “Cancel”
- Click “Finish”
- Double click to Install patch “scus_CA_Patch_1.2B” (version 7.1.100.124.8)
- Click “Ok” to finish patch completion
- Go to “C:\Program Files\Ubisoft\Splinter Cell\System\sclow.bat”
- Right click on “sclow.bat” and select sub menu item “Edit”
- Ensure the “sclow.bat”file reads:
    - splintercell.exe 1_1_1Tbilisi.scl PLAYTIMEDEMO=1_1_1TbilisiDemo.bin -NOSOUND RESOLUTION=1024X768 SHADOWLEVEL=LOW SHADOWRESOLUTION=LOW EFFECTSQUALITY=LOW SHADOWMODE=PROJECTOR
    - splintercell.exe 1_1_1Tbilisi.scl PLAYTIMEDEMO=1_1_1TbilisiDemo.bin -NOSOUND RESOLUTION=1024X768 SHADOWLEVEL=LOW SHADOWRESOLUTION=LOW EFFECTSQUALITY=LOW SHADOWMODE=PROJECTOR
    - splintercell.exe 1_1_1Tbilisi.scl PLAYTIMEDEMO=1_1_1TbilisiDemo.bin -NOSOUND RESOLUTION=1024X768 SHADOWLEVEL=LOW SHADOWRESOLUTION=LOW EFFECTSQUALITY=LOW SHADOWMODE=PROJECTOR
    - splintercell.exe 1_1_2Tbilisi.scl PLAYTIMEDEMO=1_1_2TbilisiDemo.bin -NOSOUND RESOLUTION=1024X768 SHADOWLEVEL=LOW

SHADOWRESOLUTION=LOW EFFECTSQUALITY=LOW SHADOWMODE=PROJECTOR
    - splintercell.exe 1_1_2Tbilisi.scl PLAYTIMEDEMO=1_1_2TbilisiDemo.bin -NOSOUND RESOLUTION=1024X768 SHADOWLEVEL=LOW SHADOWRESOLUTION=LOW EFFECTSQUALITY=LOW SHADOWMODE=PROJECTOR
    - splintercell.exe 1_1_2Tbilisi.scl PLAYTIMEDEMO=1_1_2TbilisiDemo.bin -NOSOUND RESOLUTION=1024X768 SHADOWLEVEL=LOW SHADOWRESOLUTION=LOW EFFECTSQUALITY=LOW SHADOWMODE=PROJECTOR

To run the benchmark:

- Create a shortcut to the batch files stored in the directory noted above
- Input Splinter Cell CD3 into drive
- Double click the file on the desktop

Star Wars - Jedi Knight II: Jedi Outcast (1024x768x32)

- Click “Install” to install Jedi Knight II
- Click “Next” to install Jedi Knight II: Jedi Outcast
- Click “Yes” to accept “License Agreement”
- Click “Automatic” installation
- Click “Yes” to confirm automatic installation
- Click “Exit” installation
- Install patch “Jkiiup104.exe”
- Click Continue to install
- Click OK to continue
- Unzip “assets2.pak3” found in GameData\Base folder
- Extract the file “jk2ffa.dm_15” to the Base\Demos folder and rename the demo to “jk2ffa.dm_16”
- Copy renamed demo file to a new directory, “Demos” off of the path c:\program files\LucasArts\Star Wars JK II Jedi Outcast\GameData\base
- Create shortcut to desktop for Jedi Knight II Multi Player: c:\Program Files\LucasArts\Star Wars JK II Jedi Outcast\GameData\jk2mp.exe
- Right click “Shortcut to jk2mp” from desktop and select “Properties”
- Type “+set sv_cheats 1” at the end of the “Target Location” for example (“c:\Program Files\LucasArts\Star Wars JK II Jedi Outcast\GameData\jk2mp.exe” “+set sv_cheats 1)
- Click “Ok” to close shortcut
- Run demo from the command line in the multiplayer game by typing "timedemo 1" and then "demo jk2ffa"

To run the benchmark:

- Execute Shortcut to jk2mp from desktop
- Click “Setup”
- Click “Video”
- Select “1024x768x32” for Video Mode” and “32-bit” “Color Depth”
- Click “Apply Changes”

- Click “Yes” to continue to Main Menu
- Hit “Shift ~”
- Type “timedemo 1”
- Type “demo jk2ffa”
- Hit “Enter”
- Hit “Shift ~” and scroll up to see score

Unreal Tournament (1024x768x32)

- Click “Next” to install Unreal Tournament
- Click “I Agree” to accept “License Agreement”
- Click “Next” to install to default “Destination Location”
- Click “Next” to install default components
- Click “Install” to install Unreal Tournament
- Click “Finish” to complete installation
- Install Unreal Tournament patch: UTPatch436.exe
- Click “Next” to install Unreal Tournament patch
- Click “Next” to install to default “Destination Location”
- Click “Next” default CD-Rom location
- Click “Install” to install “Unreal Tournament patch”
- Click “Finish” to complete installation
- Copy “wicked405.dem” into “c:\unrealtournment\system”
- Go to Windows “Start” and chose “Unreal Tournament”
- Execute “Play Unreal Tournament”
- Click “Next” for “First-Time Configurations”
- Click “Next” for “First-Time Configurations”
- Click “Next” for “First-Time Configurations”
- Click “Run” for “First-Time Configurations”
- Click “Options” and select “Preferences”
- Select “1024x768” “Resolution” and click “Yes” to accept change
- Select “32 bit” “Color Depth” and click “Yes” to accept change
- Select “Min Desired Frame rate” type “0” and click “Close”
- Click “Game” and select “Quit”

To run the benchmark:

- Execute “Play Unreal Tournament”
- Hit “Esc” to enter main menu
- Click “Tools” in tool bar and select “Timedemo Statistics”
- Hit "~" to go into console mode
- Go to “Game” menu
- Choose “Start a practice session”
- Hit “~” to go to console
- Type “demoplay wicked405”
- Hit “Enter” followed by "~" to start benchmark
- Type "~" to view demo results

Unreal Tournament 2003 (1024x768x32)

- Install Unreal Tournament 2003 “ut2003demo2206.exe”
- Click “Next” to install Unreal Tournament 2003
- Click “I Agree” to accept “License Agreement”
- Click “Next” to install to default “Destination Location”
- Click “Next” to install default components
- Click “Install” to install Unreal Tournament 2003
- Click “Finish” to complete installation

To run the benchmark:

- To launch benchmark go to “c:\UT2003Demo\System\Benchmark.exe”
- Select “1024x768” and click “Start” to launch demo

WinRAR

- Install “ActivePerl-5.8.0.806-mswin32-x86”
- Click on “Next” to begin install
- Choose “I accept the terms in the license agreement” and click “Next”
- Click “Next” for default install
- Click “Next” to privacy policy
- Click “Next” to default options
- Click “Install” to continue
- Click “Finish” to complete install
- Install “winrar320” from CD
- Click “Install” to continue
- Click “Ok” to default setup
- Click “Done” to complete install
- Go to “My computer” and select “C Drive”
- Click “File” menu , choose “New folder” and create “rartest”
- Copy “rartestpl” file from CD to new folder

To run the benchmark:

- Double click on the “rartestpl” file which creates a directory with a text file with the test results

XMPEG

- Install DIVX from CD folder “DIVX5.03pro”
- Click “Next” to begin installation
- Click “Next” to “Welcome” note
- Click “Next” to “Requirements” note
- Click “Yes” to license agreement
- Click “Yes” twice o “Gator” privacy agreement
- Select “Custom” for “Type of Setup Program” and click “Next”

- Click “Next” to continue
- Click “Next” to select default location
- Click “Next” to install
- Click “Close” upon install
- Reboot the system
- Install “xmpeg50final” from CD
- Choose “English” and click “Next” for language selection
- Click “Next” to “Welcome” note
- Click “Next” to “Readme” information
- Click “Next” to choose destination location for install
- Click “Next” to default folder settings
- Click “Next” to start file copy
- Click “Finish” to complete file copy
- Click “Ok” to illegal information
- Click “Cancel” to stop video conversion wizard for manual start
- Click on reel icon to the left hand side of the “XMPEG” title bar
- Select “Open”
    - Go to desktop and open the “testfile” that was created under AVI MPG (See above)
    - Click “Ok”
- Select “Options” from the menu
    - Under “Video” tab, unclick “Auto” and click on “YUY2”
    - Under “Audio” tab, deselect “Same as Input” and select “48000Hz”
- Go to menu and choose “Set Plug-In Options”
    - Under “Advanced” tab, select “benchmark mode” and type in “5400” for “Number of frames asked”
    - Click “Ok”

To run the benchmark:

- Go to menu and choose “Start Conversion”