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MSI NX6800 128MB

By Dan Gaul
September 15th, 2004

Score: 9 out of 10
Price: $310-$341
Highs: Excellent software package, solid performance, quality construction
Lows: Requires a 350-watt power supply, can be loud on occasion

"MSI has taken a regular video card and presented it in such a way that you feel like you are getting a complete gaming system."

For those looking to upgrade their video card, the NX6800 should be at the top of your list. If money is no object and you would prefer the top-of-the-line 6800 Ultra video card, we recommend you still stay with the MSI brand. MSI has taken a regular video card and presented it in such a way that you feel like you are getting a complete gaming system. The NX6800 is a solid performing card for its price range, but when you add in the amount of software and the quality of the board itself, the NX6800 stands apart from the crowd.

If you have a Radeon 9800 PRO or XT then we do not recommend upgrading to the NX6800 or any other 6800 based video card. Your best performance gain will be seen when stepping up to the 6800 Ultra video cards or the ATI X800 line. However, if you have a 5700, Radeon 9600 or slower video card, then you should see a significant increase in your gaming performance when upgrading to the NX6800.

Introduction

It has been a few months since Nvidia announced their new 6800 series of graphics cards which includes the 6800, the 6800 GT and 6800 Ultra product lines. Each card offers the gamer a higher degree of performance for today's graphics-intensive games. The 6800 product line competes directly with ATI's new X800 series of graphics cards which targets the same gaming market. So in an industry where a reference board is often packaged and re-branded under a different company's name, there are slim margins for the board manufacturers and often little to distinguish them in the mind of the consumer. MSI's NX6800 video card is based on the 6800 chipset and with it, the company is out to prove that you can get more for your money. The NX6800 has an MSRP of $399 but can be found through our price comparison page for as low as $320.

MSI's NX6800 comes with a large cooling system

Feature and Design

As was mentioned in our introduction, there are three series of graphics cards in the Nvidia 6800 product line. MSI's NX6800 video card is a regular 6800 based video card which bridges the gap between the GeForce 6800 GT and GeForce 5900/5950 video cards. Nvidia's 6800 series of cards are based on their new NV40 graphics processing unit and features support for the latest DirectX API, DirectX 9.0c. What this means is that the 6800 series supports Pixel Shader and Vertex Shader 3.0. Because this appears to be the only difference between 9.0c and previous versions of DirectX 9, Microsoft has opted to keep this incremental update as version "c" rather than calling it DirectX 9.1 altogether. ATI's new X800 series of graphics cards do not support this new version of DirectX. Is this that big of a deal? The answer is yes and no. A few months ago we probably would have said no, but with new updates for games like Far Cry, Battlefield Vietnam, Pain Killer, Serious Sam 2 and more which adds DirectX 9.0c capabilities, hardcore gamers may be looking for their video cards to support the new version.

Based on the NV40 architecture, the NX6800 bears a similar resemblance to the 6800 GT and Ultra series of cards, but is "crippled" so as to perform on par with its price. This means the NX6800 has a core clock speed of 325MHz compared to 350MHz for the GT version and 400MHZ for the Ultra version. The pixel pipelines on the NX6800 are limited to 12 pipelines versus 16 for the two other versions. The graph below will show the differences between the three 6800 cards:

Board Specifications			
Board Configuration	6800 Ultra	6800 GT	6800
Core Clock Rate	400MHz	350	325
Pixel Pipelines	16	16	12
Pixel Fill-rate	6.4G Pixels/sec	5.6G Pixels/sec	3.9G Pixels/sec
Texture Fill-rate	6.4G Textures/sec	5.6G Textures/sec	3.9G Textures/sec
Vertex Shaders	6	6	5
Geometry Rate	600M Tris/sec	525M Tris/sec	406M Tris/sec
Memory Speed	550MHz GDDR-3 (1.1GHz Effective)	500MHz GDDR-3 (1GHz Effective)	350MHz DDR (700MHz Effective)
Memory Bandwidth	35.2GB/sec	32GB/sec	22.4GB/sec
Frame Buffer Size	256MB	256MB	128MB

So while the NX6800 might not be the fastest card in the 6800 product line, MSI has gone to great lengths to make this card a solid value. The packaging that the NX6800 comes in gives you the feeling you are buying something important. The box is larger than normal and the look and overall presentation are top-notch. $400 dollars is a lot of money, especially in an industry that has a six-month product lifecycle. Slapping a reference board into a generic box and selling it for that much money just won't fly with today's demanding gamers.

MSI has used some colorful acrylic with fancy graphics to make the card look very high-end. On the card itself, MSI has gone with their traditional red PCB and has added a very stylish and high quality copper heat sink and cooling system. Fortunately the design of the NX6800 allows it to be in a single slot. The 6800 Ultra card featuring cooling hardware that is so large that is takes up two PCI slots in your computer – not to mention two separate power supply connectors. The copper cooler on the

NX6800 features an embedded 70mm cooling fan just to the left of the GPU and is designed to help vent the air away from the card. MSI includes a slider lever which allows you to manually adjust the speed of the GPU fan. So if you have plenty of cooling in your system already and the noise level of the NX6800 is just too loud for you, you can slide the lever to the left to slow down the speed of the fan. We recommend keeping the fan speed up all the way to help prevent any sort of heat related issues which can cause your system to lock up.

MSI includes three video outputs connectors, a traditional analog VGA output, a Digital DVI output and S-video output so you can hook up the card to various monitors. The real treat to the NX6800 package however is the amount of software which MSI includes with it. *Prince of Persia, XIII, Splinter Cell,* and *Uru* are just a few of the 17 games which come with the NX6800. Add to that 20 utility programs and MSI's own Media Center Deluxe II software and you have several hundred dollars worth of software on 14 CD's; and these are full versions, not trial versions of these popular games.

Setup and Performance

Installing the NX6800 only requires a few steps more than normally associated with a regular video card. First of all, because the NX6800 is based on Nvidia's 6800 chipset, it has system requirements that are a little more demanding than older cards. This means you will need to have a 600MHz or faster computer which at least 64MB of RAM and a 350Watt power supply. The power supply requirement itself is a huge deal. You may be able to get away with your 250 or 300 watt power supply as long as it's from a well known brand, but we recommend upgrading your power supply just to be safe. Honestly, if you're going to be purchasing this card, you really should have a system significantly better than its listed minimum requirements. Nvidia's 6800 ultra video card requires at least a 450-watt power supply which is very demanding by today's standards. To put things into perspective, ATI's new X800 video cards are able to run on lower power 250-watt power supplies, and promise similar performance to the 6800 series of cards.

MSI uses a software utility which automatically updates the video cards drivers. We found this utility to work as designed, but it's also not a necessity. The reference 6800 card drivers from Nvidia's website will work just as well. We had no problem running the NX6800 using the Nvidia drivers. The NX6800 installed without a hitch and posed no problems with any of the games we benchmarked it with.

This is the part of the review that is probably the most important: just how fast is the NX6800, and is it worth upgrading your current video card? In our benchmarks the NX6800 was on par with the Radeon 9800PRO on most of the lower end resolution settings, but where the NX6800 started to pull away was in the higher resolution benchmarks which feature anti-aliasing. The Nvidia 5700 series card we used which features 256MB of memory compared to the Radeon 9800PRO and NX6800 128MB, simply could not compete. In all of our benchmarks the 6800 Ultra card led the pack, but where it separated itself from the NX6800 was again in the higher resolution benchmarks. So if you have an ATI Radeon 9800PRO, upgrading to the NX6800 is not a wise choice, instead we would recommend skipping ahead to the 6800 Ultra series where you will notice a significant difference in performance. And if you have an Nvidia Geforce FX 5700 or 5900 video card, then upgrading to the NX6800 should yield better performance. The NX6800 performs within a few frames per second of the ATI X800 PRO video card. Spending an extra $100 and choosing an Nvidia 6800 Ultra over the 6800 will give you about 10-20 more frames per second at the highest resolutions – which is crucial for the hardcore gamer. For complete benchmarking results please click on the performance tab above and below this review.

Conclusion

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Copper
ULTRA™

- One-Slot Design
- Pure Copper Cooler
- Advanced Low-Temperature-Soldering Technology
- The Latest De-Oxidized Technology

ULTRA Gear™
- Adjustable Fan Speed
- Default Mode 2800RPM = 30db(A)
- Turbo Mode 4000RPM = 39db(A)

CINEFX 3.0 Shading Architecture
- Vertex Shaders
- Support for Microsoft DirectX 9.0 Vertex Shader 3.0
- Displacement mapping
- Geometry Instancing
- Infinite length vertex programs
- Pixel Shaders
- Support for DirectX 9.0 Pixel Shader 3.0
- Full pixel branching support
- Support for Multiple Render Targets(MRTs)
- Infinite length pixel programs
- Next-Generation Texture Engine
- Up to 16 textures per rendering pass
- Support for 16-bit floating point format and 32-bit floating point format
- Support for non-power of two textures
- Support for sRGB texture format for gamma textures
- DirectX and S3TC texture compression
- Full 128-bit studio-quality floating point precision through the entire rendering pipeline with native hardware support for 32bpp, 64bpp, and 128bpp rendering modes

64-Bit Texture Filtering and Blending
- Full floating point support throughout entire pipeline
- Floating point filtering improves the quality of images in motion
- Floating point texturing drives new levels of clarity and image detail
- Floating point frame buffer blending gives detail to special effects like motion blur and explosions

Intellisample 3.0 Technology
- Advanced 16x anisotropic filtering
- Blistering-fast antialiasing and compression performance
- New rotated-grid antialiasing removes jagged edges for incredible edge quality
- Support for advanced lossless compression algorithms for color, texture, and z-data at even higher resolutions and frame rates
- Fast z-clear
- High-resolution compression technology (HCT) increases performance at higher resolutions through advances in compression technology

Ultrashadow II Technology
- Designed to enhance the performance of shadow-intensive games, like id Software's Doom III

Advanced Video and Display Functionality
- Dedicated on-chip video processor
- MPEG video encode and decode
- WMV9 decode acceleration
- Advanced adaptive de-interlacing
- High-quality video scaling and filtering
- DVD and HDTV-ready MPEG-2 decoding up to 1920x1080i resolutions
- Dual integrated 400MHz RAMDACs for display resolutions up to and including 2048x1536 at 85Hz.
- Dual DVO ports for interfacing to external TMDS transmitters and external TV encoders
- Microsoft® Video Mixing Renderer (VMR) supports multiple video windows with full video quality and features in each window
- Full NVIDIA® nView™ multi-display technology capability

NVIDIA® Digital Vibrance Control™ (DVC) 3.0

- DVC color controls
- DVC image sharpening controls

Operating Systems
- Windows XP
- Windows 2000

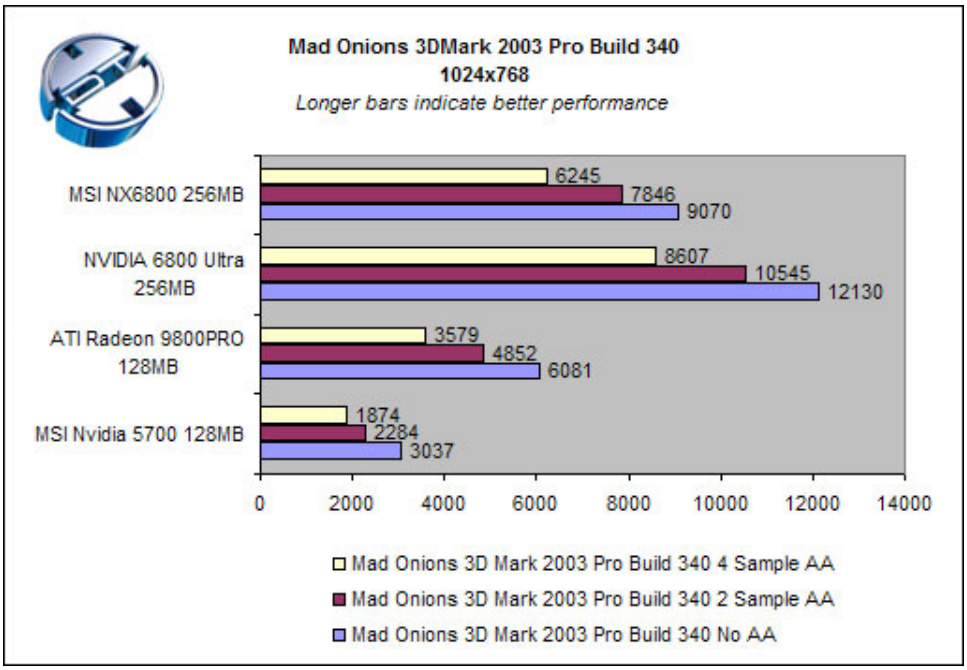
API Support
- Complete DirectX support, including the latest version of Microsoft DirectX 9.0
- Full OpenGL, including OpenGL 1.5

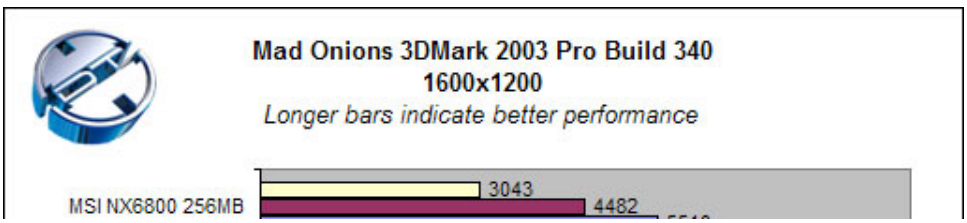
Supports super high resolution graphics modes

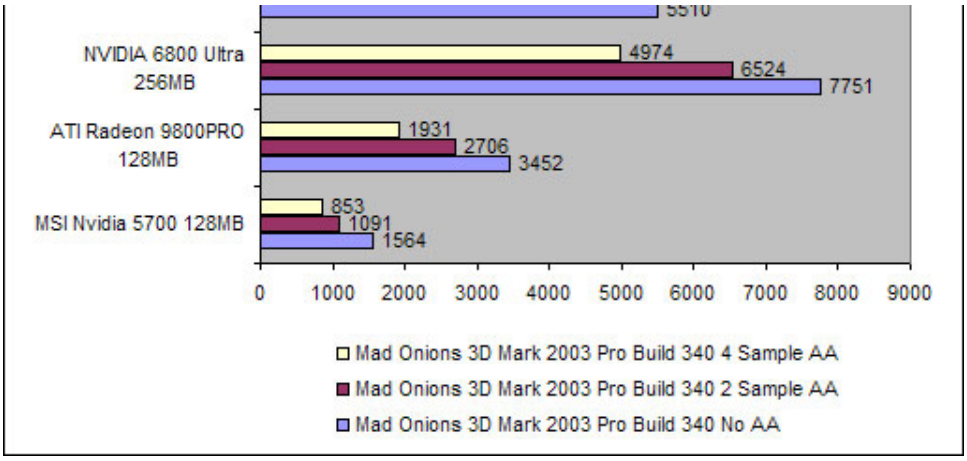
640 x 480	200Hz
800 x 600	200Hz
1024 x 768	200Hz
1152 x 864	200Hz
1280 x 1024	160Hz
1600 x 1200	120Hz
1920 x 1080	120Hz
1920 x 1200	100Hz
1920 x 1440	90Hz
2048 x 1536	85Hz

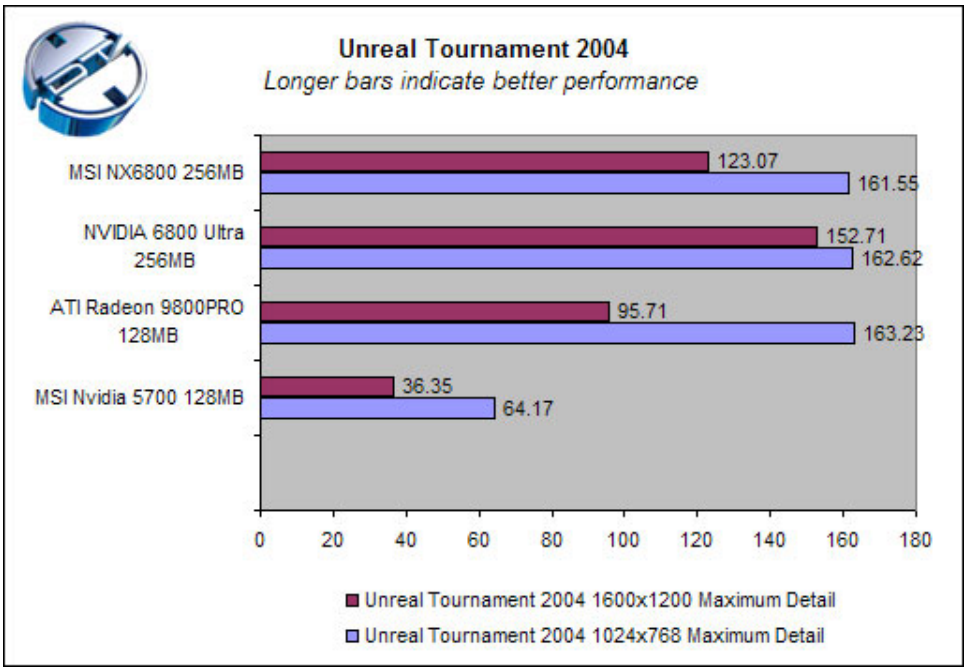
System Requirements

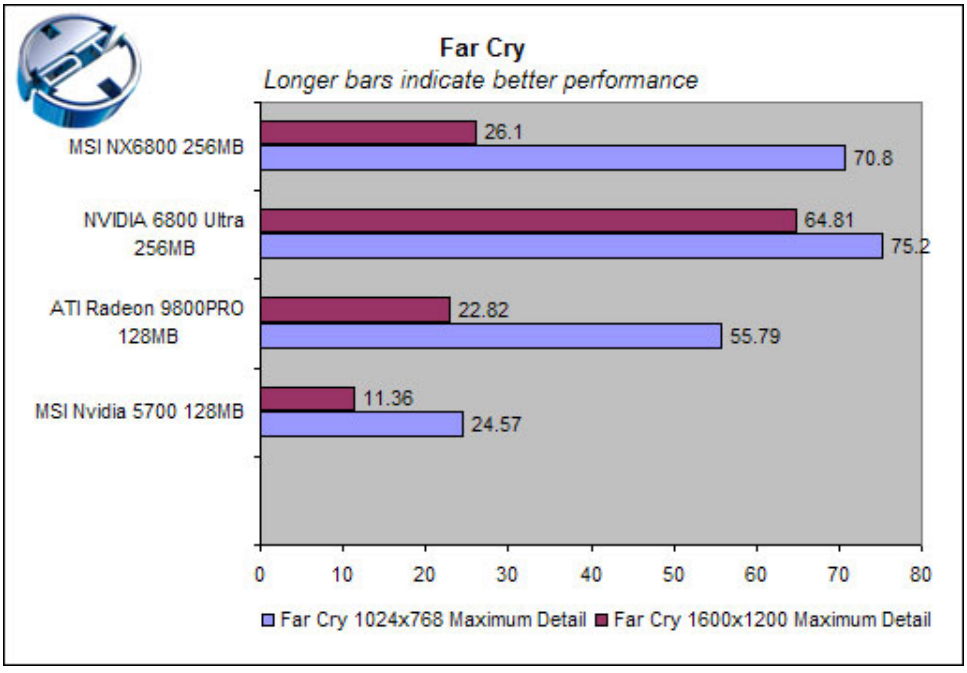
To install the VGA card, your computer system needs to meet the following requirements:
- IBM PC compatible CPU 600MHz or faster
- Requires an AGP compliant mainboard (AGP 8X port recommended)
- 64MB system memory
- 6X or faster CD-ROM drive
- Minimum 350W system power supply required
- Operating Systems Support: Windows® XP/2000

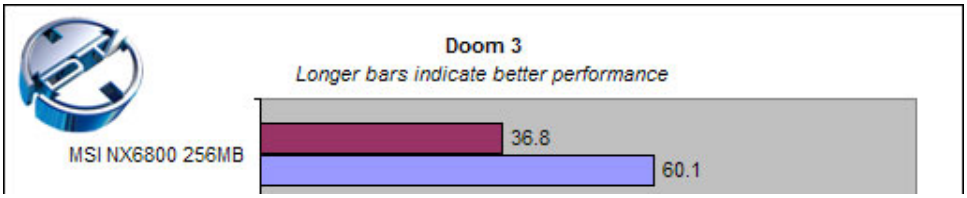


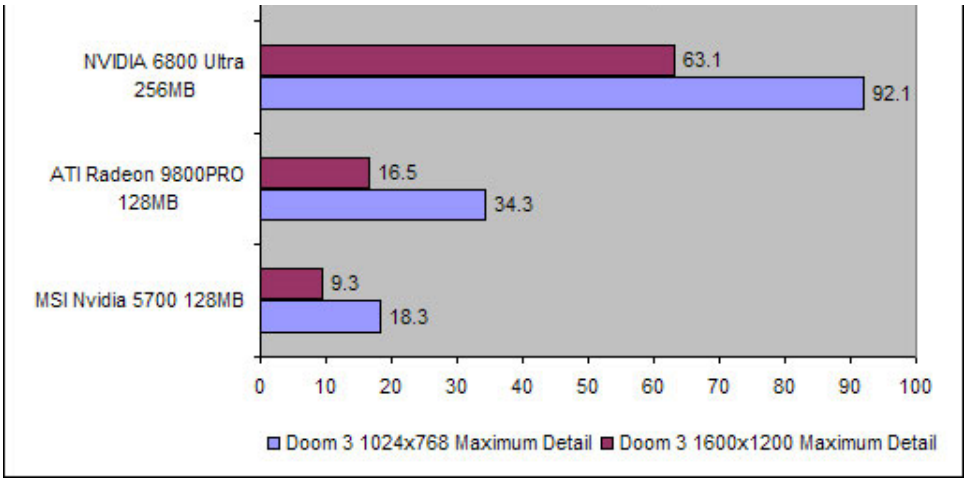


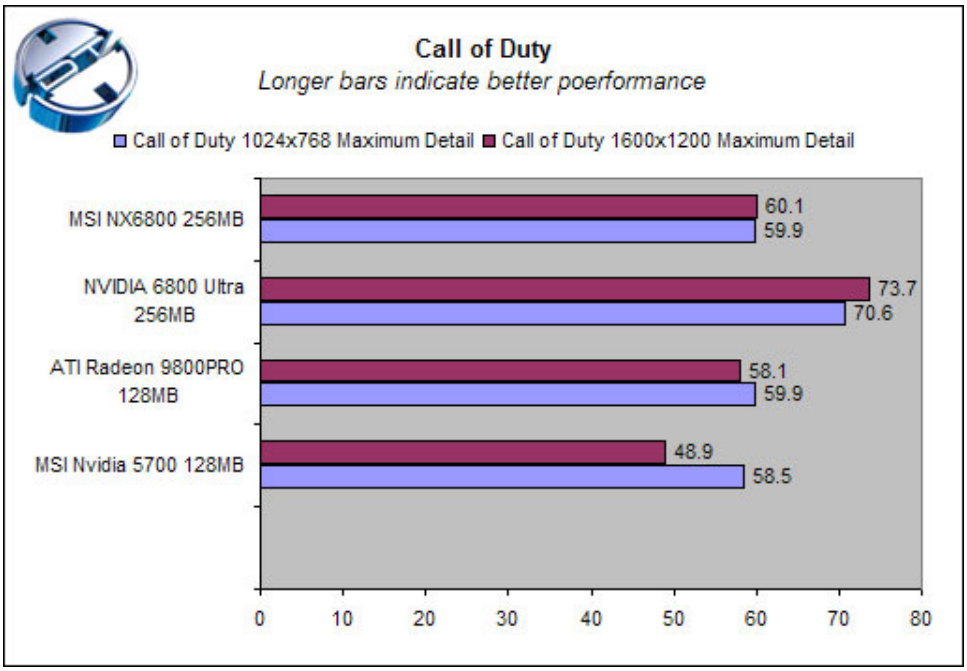

NVIDIA 6800 Ultra 256MB
4974
6524
7751
ATI Radeon 9800PRO 128MB
1931
2706
3452
MSI Nvidia 5700 128MB
853
1091
1564
0 1000 2000 3000 4000 5000 6000 7000 8000 9000
Mad Onions 3D Mark 2003 Pro Build 340 4 Sample AA
Mad Onions 3D Mark 2003 Pro Build 340 2 Sample AA
Mad Onions 3D Mark 2003 Pro Build 340 No AA


Unreal Tournament 2004
Longer bars indicate better performance
MSI NX6800 256MB
123.07
161.55
NVIDIA 6800 Ultra 256MB
152.71
162.62
ATI Radeon 9800PRO 128MB
95.71
163.23
MSI Nvidia 5700 128MB
36.35
64.17
0 20 40 60 80 100 120 140 160 180
Unreal Tournament 2004 1600x1200 Maximum Detail
Unreal Tournament 2004 1024x768 Maximum Detail


Far Cry
Longer bars indicate better performance
MSI NX6800 256MB
26.1
70.8
NVIDIA 6800 Ultra 256MB
64.81
75.2
ATI Radeon 9800PRO 128MB
22.82
55.79
MSI Nvidia 5700 128MB
11.36
24.57
0 10 20 30 40 50 60 70 80
Far Cry 1024x768 Maximum Detail
Far Cry 1600x1200 Maximum Detail


Doom 3
Longer bars indicate better performance
MSI NX6800 256MB
36.8
60.1





Test System Specifications:

Compaq X Series Desktop: AMD Athlon™ 64 FX 53 Processor; MSI K8N Neo2 Platinum motherboard; Nforce3 250 Ultra Chipset; 1GB PC3200 DDR SDRAM; 148GB RAID 0 (2 x 74GB) WD Raptor SATA 10,000 RPM; 470 Watt Enermax power supply;

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