ForceWare Graphics Drivers
Release 85 Notes

Version 88.61

For Windows Vista x86
and Windows Vista x64

NVIDIA Corporation
May 2006

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INTRODUCTION TO *RELEASE 85 NOTES*

This edition of *Release 85 Notes* describes the Release 85 ForceWare Graphics Drivers for Microsoft® Windows® Vista. NVIDIA provides these notes to describe performance improvements and bug fixes in each documented version of the driver.

Structure of the Document

This document is organized in the following sections:

- "Release 85 Driver Issues" on page 2 gives a summary of changes, and fixed and open issues in this version.

- "The Release 85 Driver" on page 9 describes the NVIDIA products and languages supported by this driver, the system requirements, and how to install the driver.

- "Mode Support for Windows" on page 13 lists the default resolutions supported by the driver.

Changes in this Edition

This is the first edition of the *Release 85 Notes* for Windows Vista, and includes information about NVIDIA ForceWare graphics driver version 88.61 since version 87.15.

C H A P T E R

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RELEASE 85 DRIVER ISSUES

This chapter describes open issues for version 88.61, and resolved issues and driver enhancements for versions of the Release 85 driver up to version 88.61. The chapter contains these sections:

Changes in Version 88.61

The following are changes made and issues resolved since driver version 87.45:

What's New in Version 88.61

- The ForceWare Driver version 88.61 offers improved application performance, and is tested for use only with Microsoft Windows Vista Beta 2.

- Version 88.61 also includes
  - The new NVIDIA Control Panel for Windows Vista x86 drivers only.
  - The OpenGL driver for compatibility testing.

Issues Resolved

- Windows Vista x64, GeForce 7900 GTX: Dusk Ultra demo fails to run due to missing OpenGL features.

- Windows Vista x86, GeForce 7900 GTX: Zoo Tycoon main menu background is black.

- Windows Vista x64, GeForce 7300 GS: Doom3 fails to launch.

- Windows Vista x64, GeForce 6800 Ultra/GT, GeForce FX 5900: Lighting for the soldier is incorrect in the 3DMark03 game test Battle of Proxycon.

- Windows Vista x86, GeForce FX 5900: Flashing polygons appear all over screen while playing Guild Wars.

- Windows Vista x86, NVIDIA Quadro FX 1300: Stability issues with Cocreate

Changes in Version 87.45

The following are changes made and issues resolved since driver version 87.15:

What's New in Version 87.45

- New products supported–
  - GeForce 7900 GTX
  - GeForce 7900 GT
  - GeForce 7600 GT
  - GeForce 7600 GS
- Hot Plug detection is now enabled.

Resolved Issues

- Windows Vista x86: Rendering problems occur on the trees in Shogun Total War.

- Windows Vista x86, GeForce 7800 GTX: 3DMark05 does not run when "Force Software Vertex Shaders" is selected, and the 3DMark05 CPU tests do not run.

- Windows Vista x86/x64, GeForce 7800 GTX, GeForce 6800, GeForce FX Series: Distant objects in FarCry have texture-stripe corruption.

- Windows Vista x86/x64, GeForce 6800/6200, GeForce FX 5900: 3DMark05 breaks intermittently during the game test.

- Windows Vista x86, GeForce 6800: Intro movies in Max Payne 2 have checkerboard pattern corruption.

- Windows Vista x86, GeForce 6 Series, GeForce FX 5900: CoralReef.wmv video does not display using Windows Media Player.

- Windows Vista x86/x64, GeForce 6800, GeForce FX 5900: Upon reboot, the driver enables Clone mode automatically on the connected monitor, even when the monitor is not enabled.

- Windows Vista x64, GeForce FX 5900: Fixed a stability issue (bugcheck C9) that occurred when reinstalling the driver.

- Windows Vista x86, GeForce 6 Series, GeForce FX 5900: CoralReef.wmv video does not display using Windows Media Player.

- Windows Vista x86/x64, GeForce FX 5900: F.E.A.R. renderer cannot be initialized to a valid video mode.

Open Issues in Version 88.61

As with every released driver, version 88.61 of the Release 85 driver has open issues and enhancement requests associated with it. This section includes lists of issues that are either not fixed or not implemented in this version. Some problems listed may not have been thoroughly investigated and, in fact, may not be NVIDIA issues. Others will have workaround solutions.

- Windows Vista x86/x64, Battlefield 1942 crashes after a minute or so of gameplay.

- Windows Vista x86: GeForce 7900 GTX, GeForce 7800 GS: Shadows are white in Dungeons & Dragons online.

- Windows Vista x86, GeForce 7900 GTX: Corruption appears when flipping thorugh video clips.

- Windows Vista x86, GeForce 7900 GTX: File-copy animation corrupts when performing multiple file copy operations.

- Windows Vista x86/x64, GeForce 6 Series, GeForce FX Series: Battlefield 1942 vehicle and troop shadows are white.

- Windows Vista x86,GeForce 6800/6600: The system crashes when running the Photo Screen Saver.

- Windows Vista x86, GeForce 6800, GeForce FX 5900: Graphics corruption occurs while playing NHL 2006.

- Windows Vista x86, GeForce 6600: With Multimon enabled, DirectX 9 Sample Billboard shows flashing corruption.

Not NVIDIA Issues

This section lists issues that are not due to the NVIDIA driver.

- Window Vista, All GPUs: Installing a new driver will sometimes result in a black screen or no display.

  This is an issue with the current Windows Vista installation process. This can be worked around using the following instructions.

  1 Uninstall all old drivers on your system using Device manager -> Display Adapter -> uninstall.

  2 Unzip the new driver package to a temporary folder on your desktop.

  3 Open the file `nv*.inf` for editing, locate the [Version] section, and modify the date in the **DriverVer** line as follows:

  ```
  ; NVIDIA Windows Vista Display INF file
  ; Copyright (c) NVIDIA Corporation. All rights reserved.

  [Version]
  Signature   = "$Windows NT$"
  Provider    = %NVIDIA%
  ClassGUID   = {4D36E968-E325-11CE-BFC1-08002BE10318}
  Class       = Display
  CatalogFile = NV_DISP.CAT
  DriverVer   = 03/10/2006, 8.7.4.4
  ```

  modify the line above to:

  DriverVer   = 03/11/2006, 8.7.4.4

  4 Save the change and install the driver using the revised INF.

  The driver should now install with no problems.

  *Any time you attempt to reinstall a driver that has been previously installed on that system, you must change the **DriverVer** date in the INF.*

- The default video decoders in Windows Vista do not yet take advantage of hardware acceleration.

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THE RELEASE 85 DRIVER

This chapter covers the following main topics:

- "Hardware and Software Support" on page 9
- "Driver Installation" on page 11
- "NVIDIA Driver History" on page 12

Hardware and Software Support

Supported Operating Systems

This Release 85 driver includes drivers designed for the following Microsoft® operating systems:

- Microsoft Windows® Vista Beta2

Supported NVIDIA Products

Table 3.1 lists the NVIDIA products supported by the Release 85 driver.

Table 3.1   Supported NVIDIA Products

Consumer Products	Workstation Products
GeForce 7900 GTX	NVIDIA Quadro FX 5500
GeForce 7900 GT	NVIDIA Quadro FX 4500 X2
GeForce 7900 GS	NVIDIA Quadro FX 4500
GeForce 7800 GTX 512	NVIDIA Quadro FX 4400
GeForce 7800 GTX	NVIDIA Quadro FX 4000 SDI
GeForce 7800 GT	NVIDIA Quadro FX 3500

Table 3.1   Supported NVIDIA Products (continued)

Consumer Products	Workstation Products
GeForce 7800 GS	NVIDIA Quadro FX 3450
GeForce 7600 GT	NVIDIA Quadro FX 3400
GeForce 7600 GS	NVIDIA Quadro FX 3000G
GeForce 7500 LE	NVIDIA Quadro FX 3000
GeForce 7300 LE	NVIDIA Quadro FX 2000
GeForce 7300 GS	NVIDIA Quadro FX 1500
GeForce 7300 GT	NVIDIA Quadro FX 1400
GeForce 7300 SE	NVIDIA Quadro FX 1300
GeForce 6800 XT	NVIDIA Quadro FX 1100
GeForce 6800 XE	NVIDIA Quadro FX 1000
GeForce 6800 Ultra	NVIDIA Quadro FX 700
GeForce 6800 LE	NVIDIA Quadro FX 600
GeForce 6800 GT	NVIDIA Quadro FX 560
GeForce 6800 LE	NVIDIA Quadro FX 550
GeForce 6800 GS	NVIDIA Quadro FX 540
GeForce 6800	NVIDIA Quadro FX 500
GeForce 6700 XL	NVIDIA Quadro FX 350
GeForce 6610 XL	NVIDIA Quadro FX 330
GeForce 6600 VE	NVIDIA Quadro NVS 285
GeForce 6600 LE	NVIDIA Quadro NVS 440
GeForce 6600 GT	
GeForce 6600	
GeForce 6500	
GeForce 6200SE with TurboCache	
GeForce 6200 with TurboCache	
GeForce 6200 LE	
GeForce 6200	
GeForce 6150 LE	
GeForce 6150	
GeForce 6100	
GeForce PCX 5900	
GeForce PCX 5750	
GeForce PCX 5300	
GeForce FX 5950 Ultra	
GeForce FX 5900ZT	
GeForce FX 5900XT	
GeForce FX 5900 Ultra	
GeForce FX 5900	

Table 3.1   Supported NVIDIA Products (continued)

Consumer Products	Workstation Products
GeForce FX 5800 Ultra	
GeForce FX 5800	
GeForce FX 5700VE	
GeForce FX 5700LE	
GeForce FX 5700 Ultra	
GeForce FX 5700	
GeForce FX 5600XT	
GeForce FX 5600SE	
GeForce FX 5600 Ultra	
GeForce FX 5600	
GeForce FX 5500	
GeForce FX 5200LE	
GeForce FX 5200 Ultra	
GeForce FX 5200	
GeForce FX 5100	

Supported Languages

The Release 85 ForceWare Graphics Drivers are available in English only at this time.

Driver Installation

Minimum Hard Disk Space

The hard disk space requirement is minimum 30.5 MB.

Installation Instructions

This driver does not include an Installshield. You must use the INF installation to install this driver as follows:

1 Follow the instructions on the NVIDIA .com Web site driver download page to locate the appropriate driver to download, based on your hardware and operating system.

2 Click the driver download link.

The license agreement dialog box appears.

3 Click **Accept** if you accept the terms of the agreement, then either open the zip file or save the file to your PC.

4 Extract the files to a temporary folder folder on your hard drive.

5 Go to the Windows Device Manager, right-click the display adapter and then click **Update driver** from the pop-up menu.

6 Install the driver using the INF that you downloaded.

Windows may default to 16bpp color after the driver install and disable the Desktop Window Manager (DWM). To work around this issue set the color to 32bpp and reboot the PC.

NVIDIA Driver History

Release 85 is the latest NVIDIA driver available. Table 3.1 contains a summary of some previous driver releases and the versions associated with them. Some versions listed may not have been released outside of NVIDIA.

Table 3.1   NVIDIA Drivers for Windows Vista

Windows Vista Build	NVIDIA ForceWare Driver
Windows Vista Beta2	NVIDIA Driver version 88.61
July 05 Vista Beta1	NVIDIA Driver included 'in the box'.
December 05 CTP build 5270.Winmain.051214-1910	NVIDIA Driver included 'in the box'.
February 06 CTP build 5308.FebCTP_Final.060217-2200 or higher	NVIDIA Drivers 87.15, 87.45

A P P E N D I X

A

MODE SUPPORT FOR WINDOWS

This chapter details the Windows modes supported by the Release 85 driver for NVIDIA products. It contains these sections:

General Mode Support Information

The NVIDIA graphics driver includes a standard list of display modes that are supported by default. These modes are listed in the section "Default Modes Supported by GPU" on page 15.

The actual modes available depend on the capabilities of the display. In addition, the NVIDIA graphics driver has a "dynamic EDID detection" capability and will make available *additional* modes that are listed in the display EDID, provided the graphics hardware can support it.

The NVIDIA graphics driver also supports the high resolutions available with the displays listed in Table A.1 as well as the non-standard modes listed in Table A.2.

Table A.1   Modes Supported for High Resolution Displays

Display	Maximum Resolution	Hardware Requirements
IBM T221 (Dual Link DVI)	3840x2400 @ 48Hz	• All High-end NVIDIA Quadro FX (see list of products in "GeForce 7 Series, GeForce 6 Series, GeForce FX Family, and NVIDIA Quadro FX Family of High End GPUs" on page 16.)
Apple 30" Cinema HD Display (Dual link DVI)	2560x1600 @ 60Hz	• All High-end NVIDIA Quadro FX (see list of products in "GeForce 7 Series, GeForce 6 Series, GeForce FX Family, and NVIDIA Quadro FX Family of High End GPUs" on page 16.) • GeForce 7900 GTX • GeForce 7900 GT • GeForce 7600 GT • GeForce 7800 GTX 512 • GeForce 7800 GTX • GeForce 7800 GT • GeForce 6800 Ultra 512 • GeForce 6800 with 512 MB

Table A.2   Non-standard Modes Supported

Resolution
1680 x 1050
1366 x 768

Default Modes Supported by GPU

This section lists the modes that are included by default in the driver INF for the following product families:

-

-

Understanding the Mode Format

Figure A.1 gives an example of how to read the mode information presented in this section.

Resolution	Color Depth	Refresh Rates

Example entry: `1024 x 768   32   60 70 72 75 85 100 120 140 144 150 170 200`
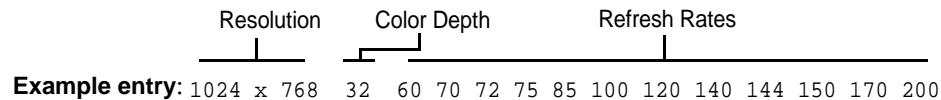
Meaning:
    Resolution: 1024 x 768
    Color depth: 32 bpp
    Refresh rates: 60 Hz, 70 Hz, 72 Hz, 75 Hz, 85 Hz, 100 Hz, 120 Hz, 140 Hz, 144 Hz, 150 Hz, 170 Hz, and 200 Hz

Figure A.1   Mode Format

Note:

- Horizontal spanning modes of 3840x1080 and above, and vertical spanning modes of 1920x2160 and above generally require at least 32 MB of video memory at 32 bpp.

- An "i" next to the refresh rate indicates an interlaced refresh rate.

GeForce 7 Series, GeForce 6 Series, GeForce FX Family, and NVIDIA Quadro FX Family of High End GPUs

This sections lists the supported display resolutions, color depths, and refresh rates for the following products:

- NVIDIA GeForce 7900 GS / GT / GTX

- NVIDIA GeForce 7800 GS / GT / GTX / GTX 512

- NVIDIA GeForce 7600 GT / GS

- NVIDIA GeForce 7500 LE

- NVIDIA GeForce 7300 GS / LE / GT / SE

- NVIDIA GeForce 6800 GT / GS / LE / XT/ XE

- NVIDIA GeForce 6800 Ultra

- NVIDIA GeForce 6800

- NVIDIA GeForce 6700 XL

- NVIDIA GeForce 6610 XL

- NVIDIA GeForce 6600 GT / LE / VE

- NVIDIA GeForce 6600

- NVIDIA GeForce 6500

- NVIDIA GeForce 6200 LE

- NVIDIA GeForce 6200 w/TurboCache™

- NVIDIA GeForce 6200SE w/TurboCache™

- NVIDIA GeForce 6200

- NVIDIA GeForce 6150

- NVIDIA GeForce 6150 LE

- NVIDIA GeForce 6100

- NVIDIA GeForce FX 5950 Ultra

- NVIDIA GeForce FX 5900 Ultra

- NVIDIA GeForce FX 5900/GeForce PCX 5900

- NVIDIA GeForce FX 5900ZT / 5900XT

- NVIDIA GeForce FX 5800 / 5800 Ultra

- NVIDIA GeForce FX 5700 Ultra/GeForce PCX 5750

- NVIDIA GeForce FX 5700LE / 5700VE
- NVIDIA GeForce FX 5700
- NVIDIA GeForce FX 5600 Ultra
- NVIDIA GeForce FX 5600XT / 5600SE
- NVIDIA GeForce FX 5600
- NVIDIA GeForce FX 5500
- NVIDIA GeForce FX 5200 / 5200 Ultra
- NVIDIA GeForce FX 5200/GeForce PCX 5300
- NVIDIA GeForce FX 5200LE
- NVIDIA Quadro FX 5500
- NVIDIA Quadro FX 4500 X2
- NVIDIA Quadro FX 4500
- NVIDIA Quadro FX 3500
- NVIDIA Quadro FX 3400 / Quadro FX 4400
- NVIDIA Quadro FX 3450 / Quadro FX 4000 SDI
- NVIDIA Quadro FX 1400
- NVIDIA Quadro FX 3000 / Quadro FX 1300
- NVIDIA Quadro FX 700
- NVIDIA Quadro FX 600
- NVIDIA Quadro FX 560
- NVIDIA Quadro FX 550
- NVIDIA Quadro FX 540
- NVIDIA Quadro FX 350
- NVIDIA Quadro FX 330
- NVIDIA Quadro NVS 440
- NVIDIA Quadro NVS 285

Standard Modes

```
320 x  200   8         60 70 72 75
320 x  240   8         60 70 72 75
400 x  300   8         60 70 72 75
```

```
 480 x  360   8           60 70 72 75
 512 x  384   8           60 70 72 75
 640 x  400   8           60 70 72 75
 640 x  480   8           60 70 72 75 85 100 120 140 144 150 170 200 240
 720 x  480   8           60
 720 x  576   8       50 60
 800 x  600   8           60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  480   8           60 70 72 75 85 100 120 140 144 150 170 200 240
 960 x  600   8           60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x  768   8           60 70 72 75 85 100 120 140 144 150 170 200 240
1088 x  612   8           60 70 72 75 85 100 120 140 144 150 170 200 240
1152 x  864   8           60 70 72 75 85 100 120 140 144 150 170 200
1280 x  720   8           60 70 72 75 85 100 120 140 144 150 170
1280 x  768   8           60 70 72 75 85 100 120 140 144 150 170
1280 x  800   8           60 70 72 75 85 100 120 140 144 150 170
1280 x  960   8           60 70 72 75 85 100 120 140 144 150 170
1280 x 1024   8           60 70 72 75 85 100 120 140 144 150 170
1360 x  768   8           60 70 72 75 85 100 120 140 144 150 170
1600 x  900   8           60 70 72 75 85 100 120 140 144 150
1600 x 1024   8           60 70 72 75 85 100 120
1600 x 1200   8           60 70 72 75 85 100 120
1920 x 1080   8    30i    60 70 72 75 85 100
1920 x 1200   8           60 70 72 75 85 100
1920 x 1440   8           60 70 72 75 85
2048 x 1536   8           60 70 72 75 85
------------------------------------------------------------------
 320 x  200  16           60 70 72 75
 320 x  240  16           60 70 72 75
 400 x  300  16           60 70 72 75
 480 x  360  16           60 70 72 75
 512 x  384  16           60 70 72 75
 640 x  400  16           60 70 72 75
 640 x  480  16           60 70 72 75 85 100 120 140 144 150 170 200 240
 720 x  480  16           60
 720 x  576  16       50 60
 800 x  600  16           60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  480  16           60 70 72 75 85 100 120 140 144 150 170 200 240
 960 x  600  16           60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x  768  16           60 70 72 75 85 100 120 140 144 150 170 200 240
```

```
1088 x  612  16          60 70 72 75 85 100 120 140 144 150 170 200 240
1152 x  864  16          60 70 72 75 85 100 120 140 144 150 170 200
1280 x  720  16          60 70 72 75 85 100 120 140 144 150 170
1280 x  768  16          60 70 72 75 85 100 120 140 144 150 170
1280 x  800  16          60 70 72 75 85 100 120 140 144 150 170
1280 x  960  16          60 70 72 75 85 100 120 140 144 150 170
1280 x 1024  16          60 70 72 75 85 100 120 140 144 150 170
1360 x  768  16          60 70 72 75 85 100 120 140 144 150 170
1600 x  900  16          60 70 72 75 85 100 120 140 144 150
1600 x 1024  16          60 70 72 75 85 100 120
1600 x 1200  16          60 70 72 75 85 100 120
1920 x 1080  16   30i    60 70 72 75 85 100
1920 x 1200  16          60 70 72 75 85 100
1920 x 1440  16          60 70 72 75 85
2048 x 1536  16          60 70 72 75 85
-----------------------------------------------------------------
 320 x  200  32          60 70 72 75
 320 x  240  32          60 70 72 75
 400 x  300  32          60 70 72 75
 480 x  360  32          60 70 72 75
 512 x  384  32          60 70 72 75
 640 x  400  32          60 70 72 75
 640 x  480  32          60 70 72 75 85 100 120 140 144 150 170 200 240
 720 x  480  32          60
 720 x  576  32       50 60
 800 x  600  32          60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  480  32          60 70 72 75 85 100 120 140 144 150 170 200 240
 960 x  600  32          60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x  768  32          60 70 72 75 85 100 120 140 144 150 170 200
1088 x  612  32          60 70 72 75 85 100 120 140 144 150 170 200
1152 x  864  32          60 70 72 75 85 100 120 140 144 150 170
1280 x  720  32          60 70 72 75 85 100 120 140 144 150
1280 x  768  32          60 70 72 75 85 100 120 140 144 150
1280 x  800  32          60 70 72 75 85 100 120 140 144 150
1280 x  960  32          60 70 72 75 85 100 120 140 144 150
1280 x 1024  32          60 70 72 75 85 100 120 140 144 150
1360 x  768  32          60 70 72 75 85 100 120 140 144 150
1600 x  900  32          60 70 72 75 85 100 120
1600 x 1024  32          60 70 72 75 85 100
```

```
1600 x 1200   32            60 70 72 75 85 100
1920 x 1080   32    30i     60 70 72 75 85
1920 x 1200   32            60 70 72 75 85
1920 x 1440   32            60 70 72 75 85
2048 x 1536   32            60 70 72 75 85
```

Horizontal Spanning Modes

```
1280 x   480   8            60 70 72 75 85 100 120 140 144 150 170 200 240
1600 x   600   8            60 70 72 75 85 100 120 140 144 150 170 200 240
1696 x   480   8            60 70 72 75 85 100 120 140 144 150 170 200 240
1920 x   600   8            60 70 72 75 85 100 120 140 144 150 170 200 240
2048 x   768   8            60 70 72 75 85 100 120 140 144 150 170 200 240
2176 x   612   8            60 70 72 75 85 100 120 140 144 150 170 200 240
2304 x   864   8            60 70 72 75 85 100 120 140 144 150 170 200
2560 x   720   8            60 70 72 75 85 100 120 140 144 150 170
2560 x   768   8            60 70 72 75 85 100 120 140 144 150 170
2560 x   800   8            60 70 72 75 85 100 120 140 144 150 170
2560 x   960   8            60 70 72 75 85 100 120 140 144 150 170
2560 x 1024    8            60 70 72 75 85 100 120 140 144 150 170
2720 x   768   8            60 70 72 75 85 100 120 140 144 150 170
3200 x   900   8            60 70 72 75 85 100 120 140 144 150
3200 x 1024    8            60 70 72 75 85 100 120
3200 x 1200    8            60 70 72 75 85 100 120
3840 x 1080    8    30i     60 70 72 75 85 100
3840 x 1200    8            60 70 72 75 85 100
3840 x 1440    8            60 70 72 75 85
4096 x 1536    8            60 70 72 75 85
----------------------------------------------------------------
1280 x   480   16           60 70 72 75 85 100 120 140 144 150 170 200 240
1600 x   600   16           60 70 72 75 85 100 120 140 144 150 170 200 240
1696 x   480   16           60 70 72 75 85 100 120 140 144 150 170 200 240
1920 x   600   16           60 70 72 75 85 100 120 140 144 150 170 200 240
2048 x   768   16           60 70 72 75 85 100 120 140 144 150 170 200 240
2176 x   612   16           60 70 72 75 85 100 120 140 144 150 170 200 240
2304 x   864   16           60 70 72 75 85 100 120 140 144 150 170 200
2560 x   720   16           60 70 72 75 85 100 120 140 144 150 170
2560 x   768   16           60 70 72 75 85 100 120 140 144 150 170
```

```
2560 x  800  16        60 70 72 75 85 100 120 140 144 150 170
2560 x  960  16        60 70 72 75 85 100 120 140 144 150 170
2560 x 1024  16        60 70 72 75 85 100 120 140 144 150 170
2720 x  768  16        60 70 72 75 85 100 120 140 144 150 170
3200 x  900  16        60 70 72 75 85 100 120 140 144 150
3200 x 1024  16        60 70 72 75 85 100 120
3200 x 1200  16        60 70 72 75 85 100 120
3840 x 1080  16   30i  60 70 72 75 85 100
3840 x 1200  16        60 70 72 75 85 100
3840 x 1440  16        60 70 72 75 85
4096 x 1536  16        60 70 72 75 85

-----------------------------------------------------------------
1280 x  480  32        60 70 72 75 85 100 120 140 144 150 170 200 240
1600 x  600  32        60 70 72 75 85 100 120 140 144 150 170 200 240
1696 x  480  32        60 70 72 75 85 100 120 140 144 150 170 200 240
1920 x  600  32        60 70 72 75 85 100 120 140 144 150 170 200 240
2048 x  768  32        60 70 72 75 85 100 120 140 144 150 170 200
2176 x  612  32        60 70 72 75 85 100 120 140 144 150 170 200
2304 x  864  32        60 70 72 75 85 100 120 140 144 150 170
2560 x  720  32        60 70 72 75 85 100 120 140 144 150
2560 x  768  32        60 70 72 75 85 100 120 140 144 150
2560 x  800  32        60 70 72 75 85 100 120 140 144 150
2560 x  960  32        60 70 72 75 85 100 120 140 144 150
2560 x 1024  32        60 70 72 75 85 100 120 140 144 150
2720 x  768  32        60 70 72 75 85 100 120 140 144 150
3200 x  900  32        60 70 72 75 85 100 120
3200 x 1024  32        60 70 72 75 85 100
3200 x 1200  32        60 70 72 75 85 100
3840 x 1080  32   30i  60 70 72 75 85
3840 x 1200  32        60 70 72 75 85
3840 x 1440  32        60 70 72 75 85
4096 x 1536  32        60 70 72 75 85
```

Vertical Spanning Modes

```
 640 x  960   8        60 70 72 75 85 100 120 140 144 150 170 200 240
 800 x 1200   8        60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  960   8        60 70 72 75 85 100 120 140 144 150 170 200 240
```

```
 960 x 1200    8           60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x 1536    8           60 70 72 75 85 100 120 140 144 150 170 200 240
1088 x 1224    8           60 70 72 75 85 100 120 140 144 150 170 200 240
1152 x 1728    8           60 70 72 75 85 100 120 140 144 150 170 200
1280 x 1440    8           60 70 72 75 85 100 120 140 144 150 170
1280 x 1536    8           60 70 72 75 85 100 120 140 144 150 170
1280 x 1600    8           60 70 72 75 85 100 120 140 144 150 170
1280 x 1920    8           60 70 72 75 85 100 120 140 144 150 170
1280 x 2048    8           60 70 72 75 85 100 120 140 144 150 170
1360 x 1536    8           60 70 72 75 85 100 120 140 144 150 170
1600 x 1800    8           60 70 72 75 85 100 120 140 144 150
1600 x 2048    8           60 70 72 75 85 100 120
1600 x 2400    8           60 70 72 75 85 100 120
1920 x 2160    8    30i    60 70 72 75 85 100
1920 x 2400    8           60 70 72 75 85 100
1920 x 2880    8           60 70 72 75 85
2048 x 3072    8           60 70 72 75 85
-----------------------------------------------------------------
 640 x  960   16           60 70 72 75 85 100 120 140 144 150 170 200 240
 800 x 1200   16           60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  960   16           60 70 72 75 85 100 120 140 144 150 170 200 240
 960 x 1200   16           60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x 1536   16           60 70 72 75 85 100 120 140 144 150 170 200 240
1088 x 1224   16           60 70 72 75 85 100 120 140 144 150 170 200 240
1152 x 1728   16           60 70 72 75 85 100 120 140 144 150 170 200
1280 x 1440   16           60 70 72 75 85 100 120 140 144 150 170
1280 x 1536   16           60 70 72 75 85 100 120 140 144 150 170
1280 x 1600   16           60 70 72 75 85 100 120 140 144 150 170
1280 x 1920   16           60 70 72 75 85 100 120 140 144 150 170
1280 x 2048   16           60 70 72 75 85 100 120 140 144 150 170
1360 x 1536   16           60 70 72 75 85 100 120 140 144 150 170
1600 x 1800   16           60 70 72 75 85 100 120 140 144 150
1600 x 2048   16           60 70 72 75 85 100 120
1600 x 2400   16           60 70 72 75 85 100 120
1920 x 2160   16    30i    60 70 72 75 85 100
1920 x 2400   16           60 70 72 75 85 100
1920 x 2880   16           60 70 72 75 85
2048 x 3072   16           60 70 72 75 85
-----------------------------------------------------------------
```

```
 640 x  960  32          60 70 72 75 85 100 120 140 144 150 170 200 240
 800 x 1200  32          60 70 72 75 85 100 120 140 144 150 170 200 240
 848 x  960  32          60 70 72 75 85 100 120 140 144 150 170 200 240
 960 x 1200  32          60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x 1536  32          60 70 72 75 85 100 120 140 144 150 170 200
1088 x 1224  32          60 70 72 75 85 100 120 140 144 150 170 200
1152 x 1728  32          60 70 72 75 85 100 120 140 144 150 170
1280 x 1440  32          60 70 72 75 85 100 120 140 144 150
1280 x 1536  32          60 70 72 75 85 100 120 140 144 150
1280 x 1600  32          60 70 72 75 85 100 120 140 144 150
1280 x 1920  32          60 70 72 75 85 100 120 140 144 150
1280 x 2048  32          60 70 72 75 85 100 120 140 144 150
1360 x 1536  32          60 70 72 75 85 100 120 140 144 150
1600 x 1800  32          60 70 72 75 85 100 120
1600 x 2048  32          60 70 72 75 85 100
1600 x 2400  32          60 70 72 75 85 100
1920 x 2160  32    30i   60 70 72 75 85
1920 x 2400  32          60 70 72 75 85
1920 x 2880  32          60 70 72 75 85
2048 x 3072  32          60 70 72 75 85


     ----------------------------------------------------------------
```

NVIDIA Quadro FX Family and NVIDIA Quadro NVS Series GPUs

This sections lists the supported display resolutions, color depths, and refresh rates for the following GPUs:

- NVIDIA Quadro FX 2000
- NVIDIA Quadro FX 1000
- NVIDIA Quadro FX 500
- NVIDIA Quadro FX 600
- NVIDIA Quadro FX 1100

Standard Modes

```
 320 x  200   8            60     70 72 75
 320 x  240   8            60     70 72 75
 400 x  300   8            60     70 72 75
 480 x  360   8            60     70 72 75
 512 x  384   8            60     70 72 75
 640 x  400   8            60     70 72 75
 640 x  480   8            60     70 72 75 85 100 120 140 144 150 170 200 240
 720 x  480   8            60
 720 x  576   8         50 60
 800 x  600   8            60     70 72 75 85 100 120 140 144 150 170 200 240
 848 x  480   8            60     70 72 75 85 100 120 140 144 150 170 200 240
 960 x  600   8            60     70 72 75 85 100 120 140 144 150 170 200 240
 960 x 1200   8                61
1024 x  768   8            60     70 72 75 85 100 120 140 144 150 170 200 240
1088 x  612   8            60     70 72 75 85 100 120 140 144 150 170 200 240
1152 x  864   8            60     70 72 75 85 100 120 140 144 150 170 200
1280 x  720   8            60     70 72 75 85 100 120 140 144 150 170
1280 x  768   8            60     70 72 75 85 100 120 140 144 150 170
1280 x  800   8            60     70 72 75 85 100 120 140 144 150 170
1280 x  960   8            60     70 72 75 85 100 120 140 144 150 170
1280 x 1024   8            60     70 72 75 85 100 120 140 144 150 170
1360 x  768   8            60     70 72 75 85 100 120 140 144 150 170
1600 x  900   8            60     70 72 75 85 100 120 140 144 150
1600 x 1024   8            60     70 72 75 85 100 120
1600 x 1200   8            60     70 72 75 85 100 120
1920 x 1080   8    30i     60     70 72 75 85 100
```

NVIDIA Corporation

```
1920 x 1200    8         60     70 72 75 85 100
1920 x 1440    8         60     70 72 75 85
2048 x 1536    8         60     70 72 75 85
------------------------------------------------------------------
 320 x  200   16         60     70 72 75
 320 x  240   16         60     70 72 75
 400 x  300   16         60     70 72 75
 480 x  360   16         60     70 72 75
 512 x  384   16         60     70 72 75
 640 x  400   16         60     70 72 75
 640 x  480   16         60     70 72 75 85 100 120 140 144 150 170 200 240
 720 x  480   16         60
 720 x  576   16      50 60
 800 x  600   16         60     70 72 75 85 100 120 140 144 150 170 200 240
 848 x  480   16         60     70 72 75 85 100 120 140 144 150 170 200 240
 960 x  600   16         60     70 72 75 85 100 120 140 144 150 170 200 240
 960 x 1200   16             61
1024 x  768   16         60     70 72 75 85 100 120 140 144 150 170 200 240
1088 x  612   16         60     70 72 75 85 100 120 140 144 150 170 200 240
1152 x  864   16         60     70 72 75 85 100 120 140 144 150 170 200
1280 x  720   16         60     70 72 75 85 100 120 140 144 150 170
1280 x  768   16         60     70 72 75 85 100 120 140 144 150 170
1280 x  800   16         60     70 72 75 85 100 120 140 144 150 170
1280 x  960   16         60     70 72 75 85 100 120 140 144 150 170
1280 x 1024   16         60     70 72 75 85 100 120 140 144 150 170
1360 x  768   16         60     70 72 75 85 100 120 140 144 150 170
1600 x  900   16         60     70 72 75 85 100 120 140 144 150
1600 x 1024   16         60     70 72 75 85 100 120
1600 x 1200   16         60     70 72 75 85 100 120
1920 x 1080   16   30i   60     70 72 75 85 100
1920 x 1200   16         60     70 72 75 85 100
1920 x 1440   16         60     70 72 75 85
2048 x 1536   16         60     70 72 75 85
------------------------------------------------------------------
 320 x  200   32         60     70 72 75
 320 x  240   32         60     70 72 75
 400 x  300   32         60     70 72 75
 480 x  360   32         60     70 72 75
 512 x  384   32         60     70 72 75
```

640 x 400	32		60	70	72	75											
640 x 480	32		60	70	72	75	85	100	120	140	144	150	170	200	240
720 x 480	32		60												
720 x 576	32	50	60												
800 x 600	32		60	70	72	75	85	100	120	140	144	150	170	200	240
848 x 480	32		60	70	72	75	85	100	120	140	144	150	170	200	240
960 x 600	32		60	70	72	75	85	100	120	140	144	150	170	200	240
960 x 1200	32		61												
1024 x 768	32		60	70	72	75	85	100	120	140	144	150	170	200
1088 x 612	32		60	70	72	75	85	100	120	140	144	150	170	200
1152 x 864	32		60	70	72	75	85	100	120	140	144	150	170
1280 x 720	32		60	70	72	75	85	100	120	140	144	150
1280 x 768	32		60	70	72	75	85	100	120	140	144	150
1280 x 800	32		60	70	72	75	85	100	120	140	144	150
1280 x 960	32		60	70	72	75	85	100	120	140	144	150
1280 x 1024	32		60	70	72	75	85	100	120	140	144	150
1360 x 768	32		60	70	72	75	85	100	120	140	144	150
1600 x 900	32		60	70	72	75	85	100	120
1600 x 1024	32		60	70	72	75	85	100
1600 x 1200	32		60	70	72	75	85	100
1920 x 1080	32	30i	60	70	72	75	85
1920 x 1200	32		60	70	72	75	85
1920 x 1440	32		60	70	72	75	85
2048 x 1536	32		60	70	72	75	85

Horizontal Spanning Modes

1280 x 480	8		60	70	72	75	85	100	120	140	144	150	170	200	240
1600 x 600	8		60	70	72	75	85	100	120	140	144	150	170	200	240
1696 x 480	8		60	70	72	75	85	100	120	140	144	150	170	200	240
1920 x 600	8		60	70	72	75	85	100	120	140	144	150	170	200	240
1920 x 1200	8		61												
2048 x 768	8		60	70	72	75	85	100	120	140	144	150	170	200	240
2176 x 612	8		60	70	72	75	85	100	120	140	144	150	170	200	240
2304 x 864	8		60	70	72	75	85	100	120	140	144	150	170	200
2560 x 720	8		60	70	72	75	85	100	120	140	144	150	170
2560 x 768	8		60	70	72	75	85	100	120	140	144	150	170
2560 x 800	8		60	70	72	75	85	100	120	140	144	150	170

```
2560 x  960   8          60     70 72 75 85 100 120 140 144 150 170
2560 x 1024   8          60     70 72 75 85 100 120 140 144 150 170
2720 x  768   8          60     70 72 75 85 100 120 140 144 150 170
3200 x  900   8          60     70 72 75 85 100 120 140 144 150
3200 x 1024   8          60     70 72 75 85 100 120
3200 x 1200   8          60     70 72 75 85 100 120
3840 x 1080   8   30i    60     70 72 75 85 100
3840 x 1200   8          60     70 72 75 85 100
3840 x 1440   8          60     70 72 75 85
4096 x 1536   8          60     70 72 75 85
    ----------------------------------------------------------------
1280 x  480  16          60     70 72 75 85 100 120 140 144 150 170 200 240
1600 x  600  16          60     70 72 75 85 100 120 140 144 150 170 200 240
1696 x  480  16          60     70 72 75 85 100 120 140 144 150 170 200 240
1920 x  600  16          60     70 72 75 85 100 120 140 144 150 170 200 240
1920 x 1200  16               61
2048 x  768  16          60     70 72 75 85 100 120 140 144 150 170 200 240
2176 x  612  16          60     70 72 75 85 100 120 140 144 150 170 200 240
2304 x  864  16          60     70 72 75 85 100 120 140 144 150 170 200
2560 x  720  16          60     70 72 75 85 100 120 140 144 150 170
2560 x  768  16          60     70 72 75 85 100 120 140 144 150 170
2560 x  800  16          60     70 72 75 85 100 120 140 144 150 170
2560 x  960  16          60     70 72 75 85 100 120 140 144 150 170
2560 x 1024  16          60     70 72 75 85 100 120 140 144 150 170
2720 x  768  16          60     70 72 75 85 100 120 140 144 150 170
3200 x  900  16          60     70 72 75 85 100 120 140 144 150
3200 x 1024  16          60     70 72 75 85 100 120
3200 x 1200  16          60     70 72 75 85 100 120
3840 x 1080  16   30i    60     70 72 75 85 100
3840 x 1200  16          60     70 72 75 85 100
3840 x 1440  16          60     70 72 75 85
4096 x 1536  16          60     70 72 75 85
    ----------------------------------------------------------------
1280 x  480  32          60     70 72 75 85 100 120 140 144 150 170 200 240
1600 x  600  32          60     70 72 75 85 100 120 140 144 150 170 200 240
1696 x  480  32          60     70 72 75 85 100 120 140 144 150 170 200 240
1920 x  600  32          60     70 72 75 85 100 120 140 144 150 170 200 240
1920 x 1200  32               61
2048 x  768  32          60     70 72 75 85 100 120 140 144 150 170 200
```

```
2176 x  612  32        60    70 72 75 85 100 120 140 144 150 170 200
2304 x  864  32        60    70 72 75 85 100 120 140 144 150 170
2560 x  720  32        60    70 72 75 85 100 120 140 144 150
2560 x  768  32        60    70 72 75 85 100 120 140 144 150
2560 x  800  32        60    70 72 75 85 100 120 140 144 150
2560 x  960  32        60    70 72 75 85 100 120 140 144 150
2560 x 1024  32        60    70 72 75 85 100 120 140 144 150
2720 x  768  32        60    70 72 75 85 100 120 140 144 150
3200 x  900  32        60    70 72 75 85 100 120
3200 x 1024  32        60    70 72 75 85 100
3200 x 1200  32        60    70 72 75 85 100
3840 x 1080  32   30i  60    70 72 75 85
3840 x 1200  32        60    70 72 75 85
3840 x 1440  32        60    70 72 75 85
4096 x 1536  32        60    70 72 75 85
```

Vertical Spanning Modes

```
 640 x  960   8        60    70 72 75 85 100 120 140 144 150 170 200 240
 800 x 1200   8        60    70 72 75 85 100 120 140 144 150 170 200 240
 848 x  960   8        60    70 72 75 85 100 120 140 144 150 170 200 240
 960 x 1200   8        60    70 72 75 85 100 120 140 144 150 170 200 240
1024 x 1536   8        60    70 72 75 85 100 120 140 144 150 170 200 240
1088 x 1224   8        60    70 72 75 85 100 120 140 144 150 170 200 240
1152 x 1728   8        60    70 72 75 85 100 120 140 144 150 170 200
1280 x 1440   8        60    70 72 75 85 100 120 140 144 150 170
1280 x 1536   8        60    70 72 75 85 100 120 140 144 150 170
1280 x 1600   8        60    70 72 75 85 100 120 140 144 150 170
1280 x 1920   8        60    70 72 75 85 100 120 140 144 150 170
1280 x 2048   8        60    70 72 75 85 100 120 140 144 150 170
1360 x 1536   8        60    70 72 75 85 100 120 140 144 150 170
1600 x 1800   8        60    70 72 75 85 100 120 140 144 150
1600 x 2048   8        60    70 72 75 85 100 120
1600 x 2400   8        60    70 72 75 85 100 120
1920 x 2160   8   30i  60    70 72 75 85 100
1920 x 2400   8        60    70 72 75 85 100
1920 x 2880   8        60    70 72 75 85
2048 x 3072   8        60    70 72 75 85
```

```
-------------------------------------------------------------------
 640 x  960  16         60    70 72 75 85 100 120 140 144 150 170 200 240
 800 x 1200  16         60    70 72 75 85 100 120 140 144 150 170 200 240
 848 x  960  16         60    70 72 75 85 100 120 140 144 150 170 200 240
 960 x 1200  16         60    70 72 75 85 100 120 140 144 150 170 200 240
1024 x 1536  16         60    70 72 75 85 100 120 140 144 150 170 200 240
1088 x 1224  16         60    70 72 75 85 100 120 140 144 150 170 200 240
1152 x 1728  16         60    70 72 75 85 100 120 140 144 150 170 200
1280 x 1440  16         60    70 72 75 85 100 120 140 144 150 170
1280 x 1536  16         60    70 72 75 85 100 120 140 144 150 170
1280 x 1600  16         60    70 72 75 85 100 120 140 144 150 170
1280 x 1920  16         60    70 72 75 85 100 120 140 144 150 170
1280 x 2048  16         60    70 72 75 85 100 120 140 144 150 170
1360 x 1536  16         60    70 72 75 85 100 120 140 144 150 170
1600 x 1800  16         60    70 72 75 85 100 120 140 144 150
1600 x 2048  16         60    70 72 75 85 100 120
1600 x 2400  16         60    70 72 75 85 100 120
1920 x 2160  16   30i   60    70 72 75 85 100
1920 x 2400  16         60    70 72 75 85 100
1920 x 2880  16         60    70 72 75 85
2048 x 3072  16         60    70 72 75 85
-------------------------------------------------------------------
 640 x  960  32         60    70 72 75 85 100 120 140 144 150 170 200 240
 800 x 1200  32         60    70 72 75 85 100 120 140 144 150 170 200 240
 848 x  960  32         60    70 72 75 85 100 120 140 144 150 170 200 240
 960 x 1200  32         60    70 72 75 85 100 120 140 144 150 170 200 240
1024 x 1536  32         60    70 72 75 85 100 120 140 144 150 170 200
1088 x 1224  32         60    70 72 75 85 100 120 140 144 150 170 200
1152 x 1728  32         60    70 72 75 85 100 120 140 144 150 170
1280 x 1440  32         60    70 72 75 85 100 120 140 144 150
1280 x 1536  32         60    70 72 75 85 100 120 140 144 150
1280 x 1600  32         60    70 72 75 85 100 120 140 144 150
1280 x 1920  32         60    70 72 75 85 100 120 140 144 150
1280 x 2048  32         60    70 72 75 85 100 120 140 144 150
1360 x 1536  32         60    70 72 75 85 100 120 140 144 150
1600 x 1800  32         60    70 72 75 85 100 120
1600 x 2048  32         60    70 72 75 85 100
1600 x 2400  32         60    70 72 75 85 100
1920 x 2160  32   30i   60    70 72 75 85
```

1920 x 2400	32	60	70 72 75 85	
1920 x 2880	32	60	70 72 75 85	
2048 x 3072	32	60	70 72 75 85	

Modes Supported by DACs and TV Encoders

This section lists the supported modes and formats for the following:

-
-

External DAC Mode Support

Fairchild FMS3815 Modes Supported

Table A.3 shows the refresh rates for various resolutions of the Fairchild FMS3815 external DAC, which is commonly used on GeForce2 MX and Quadro2 MXR boards to drive a secondary CRT.

Table A.3   External DAC Modes (Fairchild FMS3815)

Resolution	Supported Rates (Hz)
640x480	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170
800x600	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170
1024x768	60, 70, 72, 75, 85, 100, 120
1152x864	60, 70, 72, 75, 85
1280x720	60, 70, 72, 75, 85, 100
1280x960	60, 70, 72, 75
1280x1024	60, 70, 72, 75
1360x768	60, 70, 72, 75, 85
1600x900	60, 70
1600x1200	––

Analog Devices ADV-7123 Modes Supported

Table A.4 shows the refresh rates for various resolutions of the Analog Devices ADV-7123 external DAC, which is commonly used on the GeForce2 MX and the Quadro2 MXR boards to drive a secondary CRT.

Table A.4   External DAC Modes (Analog Devices ADV-7123)

Resolution	Supported Rates (Hz)
640x480	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170
800x600	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170
1024x768	60, 70, 72, 75, 85, 100, 120
1152x864	60, 70, 72, 75, 85, 100
1280x720	60, 70, 72, 75, 85, 100
1280x960	60, 70, 72, 75, 85, 90

Table A.4   External DAC Modes (Analog Devices ADV-7123) (continued)

Resolution	Supported Rates (Hz)
1280x1024	60, 70, 72, 75, 85
1360x768	60, 70, 72, 75, 85, 100
1600x900	60, 70, 75
1600x1200	—

TV-Out Mode Support

Table A.5 and Table A.6 list the NTSC, PAL, and HDTV TV-Out modes supported by the NVIDIA driver.

Table A.5   Mode Support for S-Video and Composite Out

Resolution	Bit depth	Comments
320x200	8, 16, 32	DirectDraw mode; not selectable as a Windows desktop
320x240	8, 16, 32	DirectDraw mode; not selectable as a Windows desktop
640x400	8, 16, 32	DirectDraw mode; not selectable as a Windows desktop
640x480	8, 16, 32	
720x480	8, 16, 32	Overscans (for video)
720x576	8, 16, 32	Overscans (for video)
800x600	8, 16, 32	
1024x768	8, 16, 32	Conexant 25871 only

Table A.6   Mode Support for Component YPrPb Out and DVI Out

Resolution	Comments
480i (SDTV)	Supported on graphics boards with Conexant 875 or Philips 7108 TV encoders and compatible connectors, and compatible GeForce 6 Series and GeForce 7 Series GPUs.
480p (EDTV)	
720p (HDTV)	
1080i (HDTV)	
576i (PAL)	
576p (PAL)	

The driver supports manual overscan correction for component and DVI outputs. See the *ForceWare Graphics Driver User's Guide* for instructions on how to use the overscan correction features in the control panel.