



Release 186 Graphics Drivers ***Release Notes***

Version 186.30

**For Windows 7 32-bit
and Windows 7 64-bit**

**NVIDIA Corporation
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CHAPTER

1

INTRODUCTION TO *RELEASE NOTES*

This edition of *Release Notes* describes the Release 186 Quadro Professional Drivers for Microsoft® Windows® 7. 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 186 Driver Changes](#)” on page 3 gives a summary of changes, and fixed and open issues in this version.
- “[The Release 186 Driver](#)” on page 15 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 19 lists the default resolutions supported by the driver.

Changes in this Edition

This edition of the *Release Notes* for Windows 7 includes information about NVIDIA graphics driver version 186.30.

CHAPTER

2

RELEASE 186 DRIVER CHANGES

This chapter describes open issues for version 186.30, and resolved issues and driver enhancements for versions of the Release 186 driver up to version 186.30. The chapter contains these sections:

- “Version 186.18 Highlights” on page 4
- “Not NVIDIA Issues” on page 9
- “Known Product Limitations” on page 12

Version 186.30 Highlights

This section provides highlights of version 186.30 of the NVIDIA Release 186 Driver for Windows 7.

- [What's New in Release 186](#)
- [What's New in Version 186.18](#)
- [Limitations in This Release](#)
- [Special Instructional Notes for this Release](#)

What's New in Release 186

Release 186 includes several changes in the following areas:

- [OS Support](#)
- [NVIDIA Control Panel Updates](#)
- [Display Driver Updates](#)
- [Video Updates](#)
- [CUDA Updates](#)
- [OpenGL Updates](#)

OS Support

Release 185 introduces support for the Microsoft Windows 7 operating system.

NVIDIA Control Panel Updates

3D Settings Pages

- **Ambient Occlusion** setting (*new* in the Manage 3D Settings page)
Ambient occlusion enhances depth perception and adds realism to 3D scenes by providing a soft shadow effect to objects based on their placement in the scene.
- **SLI Antialiasing** (*new* in the Manage 3D Settings page)
Now available under Windows Vista and Windows 7 as well as Windows XP.
- **Workstation/Quad-buffered 3D Stereo** (*new* Stereo-Display mode settings in the Manage 3D Settings page)
Added support for the following stereoscopic 3D hardware and modes:
 - GeForce 3D Vision hardware—generic active stereo, via on-board DIN connector, passive (Clone mode) modes, and 3D DLP display
 - Generic active stereo

- Horizontal interlaced stereo displays
- Sub-field stereo displays
- Side-field stereo displays
- SeeFront Autostereoscopic LCD
- Texas Instruments 3D Ready DLP® (Digital Light Processing technology) displays
- Tridensity Multi-View and Single-Viewer displays
- Planar StereoMirror™ displays

Display Pages

- **Set up Multiple Displays** (*revised* under Windows Vista and applicable to Windows 7)

In Release 185, when SLI mode is enabled, users can now select a display from different GPUs as long as the GPUs are in the same SLI group.

- Displays must still be connected to the same GPU under Clone mode.
- Quad SLI: When using GeForce X2, Quadro X2, or the GeForce GTX 295 graphics cards, only GPUs that have two display connectors can be used to drive displays. Typically, display connectors lined up on the same slot position are connected to the same GPU.
- 3-way SLI: Multiple displays across different GPUs are not supported in 3-way SLI mode. To use more than one display, they must be connected to the same GPU.
- NVIDIA recommends connecting displays to the same GPU to shorten the driver reload time on the initial setup.
- **Adjust Desktop Color Settings** page (*revised* under Windows Vista and applicable to Windows 7)

Applications now have the option of controlling the desktop color settings.

Video & Television Pages

- **HDCP Status**

New page for verifying whether the system is HDCP-capable

- **Adjust TV Color Settings** page (*revised* under Windows Vista and applicable to Windows 7)

Applications now have the option of controlling the TV color settings.

Display Driver Updates

Device Support

Added support for EDID-like devices.

Video Updates

- Compute-based DVD upscaling
- CUDA Video Encoder 1.1: Added support for CUDA-enabled GPUs with less than 32 cores to the NVIDIA Video Encoding library.

CUDA Updates

- CUDA 2.2
- CUDA Video Encoder V1.1: Added support for CUDA-enabled GPUs with less than 32 cores to the NVIDIA Video Encoding library.

OpenGL Updates

- Support for OpenGL 3.0
- Implemented NVX_shader_buffer_load (OpenGL Shading Language).

What's New in Version 186.30

- See [“What's New in Release 186”](#) on page 4

Limitations in This Release

The following are features that are not currently supported or have limited support in this driver release:

- **SDI**

This driver does not support the Serial Display Interface (a standard for driving high color depth displays).

- **Genlock/Frame Lock**

This driver does not support the ability to synchronize multiple display outputs with an external signal.

- **NVIDIA Control Panel Display Category**

The Graph tab on the Adjust Desktop Color Settings page is not available.

- **Workstation Category**

The Workstation category page is not available with this driver version.

Special Instructional Notes for this Release

This section clarifies instructions for successfully accomplishing the following tasks:

Turning Off V-Sync to Boost Performance

To get the best benchmark and application performance measurements, turn V-Sync off as follows:

- 1 Open the NVIDIA Control Panel and make sure that *Advanced Settings* is selected from the control panel tool bar.
- 2 From the *Select a Task* pane, under 3D Settings, click **Manage 3D Settings**, then click the Global Settings tab.
- 3 From the Global presets pulldown menu, select **Base profile**.
- 4 From the Settings listbox, select **Vertical sync** and change its value to **Force off**, then click **Apply**.
- 5 From the Global presets pulldown menu, select **3D App - Default Global Settings** (the driver's default profile) or use the application profile that matches the application you are testing, then click **Apply**.

Be sure to close the NVIDIA Control Panel completely —leaving it open will affect benchmark and application performance.

NVIDIA Application Configuration Engine (ACE)

This driver includes the NVIDIA Application Configuration Engine (ACE), which automatically detects the workstation application and configures the appropriate profile settings in the NVIDIA Control Panel.

See the *NVIDIA Quadro Professional Drivers: NVIDIA Control Panel Quick Start Guide* for more information about this feature.

SLI Multi-OS – GPU Assignment in System Virtualization

On systems with two supported graphics cards installed, this driver supports a system virtualization tool's ability to directly assign a GPU to a guest virtual machine (VM). This direct assignment allows the host and guest VM to each run on their own operating system and with their own GPU and driver.

- **Supported Virtualization Software:** Parallels Workstation Extreme

- **Supported Graphics Cards**

Up to two different models can be used in a system, from among the following:

- Quadro FX 5800
- Quadro FX 4800
- Quadro FX 3800

- **Video BIOS Requirement**

- The graphics card assigned to the guest VM needs video BIOS version 62.00.39.00.00 or later.

For a list of SLI Multi-OS certified workstations, virtualization software, and OS combinations, please see http://www.nvidia.com/object/sli_multi_os.html.

Not NVIDIA Issues

This section lists issues that are not due to the NVIDIA driver as well as features that are not meant to be supported by the NVIDIA driver for Windows 7.

- “Unsupported Features” on page 9
- “Feature Differences from Windows Vista” on page 10
- “OpenGL Application Issues” on page 11

Unsupported Features

The following are features and functionality that were available in driver releases supporting Windows XP, but are not—and will not be—available in driver releases for Windows 7:

- **High resolution scaling desktop (HRSD)**
- **MultiView Display Mode** (for NVIDIA Quadro NVS graphics cards)
- **NVKeystone**
- **Unified back buffer (UBB) controls**
- **OpenGL Video Overlays**

This is an operating system limitation.
- **Overclocking**

GPU overclocking is no longer supported in the default GPU driver control panel. This feature is available in the NVIDIA System Tools software, which you can download from NVIDIA.com.
- **GPU Temperature Monitoring**

Temperature monitoring is no longer supported in the default GPU driver control panel. This feature is available in the NVIDIA System Tools software, which you can download from NVIDIA.com.
- **AGP Settings Adjustment**
- **Video Zoom**
- **Pan & Scan** - the process of panning across the desktop in order to display a desktop on a monitor with lower resolution
- **Per-display Desktop Color Setting Adjustments**

For Clone mode, the desktop color setting adjustments through the NVIDIA Control Panel can only be made across all displays in a system, and not on a per-display basis.
- **Per-display Video Color Setting Adjustments**

For Dualview mode, the video color setting adjustments through the NVIDIA Control Panel can only be made across all displays in a system, and not on a per-display basis.
- **Edge Blending**

- **Run display optimization wizard**
- **Run multiple display wizard**
- **Run television setup wizard**
- **nView Horizontal and Vertical Span Modes**

Due to architectural changes in the new Windows Vista Window Display Driver Model (WDDM), span mode cannot be supported in NVIDIA graphics drivers. NVIDIA recommends using the built-in Windows Vista multi-display modes.

- **Display/Connection Wizard** (such as was provided with Windows Media Center Edition)
- **DVD/MPEG Extensions** (such as was provided with Windows Media Center Edition)
- **Audio Extensions** (such as was provided with Windows Media Center Edition)

Feature Differences from Windows Vista

Hotplug Action

Unlike the hotplug activity under Windows Vista, the default settings are not applied when a new display is hotplugged, and there is no message balloon alert stating that a new display was detected. Under Windows 7, all display connection and detection events are handled through the Windows 7 Connecting and Configuring Displays (CCD) mechanism.

NVIDIA Control Panel Rotate Display Page

The rotation radio button labels are changed slightly under Windows 7 to be consistent with the Microsoft panel:

Table 2.1 NVIDIA Control Panel Rotation Page Radio Buttons

Clockwise Rotation	Windows 7 Label	Windows Vista Label
0 degrees	Landscape	No rotation (Landscape)
90 degrees	Portrait	90 degrees to the right (Inverted Portrait)
180 degrees	Landscape (flipped)	180 degree rotation (Inverted landscape)
270 degrees	Portrait (flipped)	90 degrees to the left (Portrait)

OpenGL Application Issues

The following are known compatibility issues for OpenGL applications developed under Windows XP:

- Mixed GDI and OpenGL rendering does not work.

A number of applications use GDI to render UI components and object highlighting. This is not supported in the Windows Vista driver model.

NVIDIA recommends converting GDI rendering to OpenGL.

The following are some applications that are known to have this issue:

- Maya 7.01
- Applications, Tools, and Benchmarks not Supported Under Windows Vista
 - GLperf
 - 3ds max 8 (later releases may be supported)
 - CATIA V5R15 (V5R16 is supported)
 - PTC's CDRS 2001
- Front buffered rendering may be slow, especially when DWM is enabled.

Flushing the rendering queue while rendering to the front buffer may cause the window manager to recomposite. Applications should therefore minimize the frequency with which they flush the rendering queue.

Known Product Limitations

This section describes problems that will not be fixed. Usually, the source of the problem is beyond the control of NVIDIA. Following is the list of problems and where they are discussed in this document:

- “1280x1024 @ 60 Hz not Available on BenQ FP241W Monitors” on page 12
- “Aero Must be Enabled for Windowed SLI AFR Mode Under Vista” on page 12
- “SLI Connector Requirement on NVIDIA Quadro SLI Cards” on page 12
- “Image Sharpening Control not Available with GeForce 8 Series and later GPUs” on page 12
- “Driver Reports 256 MB Memory on NVIDIA Quadro FX 330 Cards” on page 13
- “Applying Workstation Application Profiles” on page 13
- “Gigabyte GA-6BX Motherboard” on page 13

1280x1024 @ 60 Hz not Available on BenQ FP241W Monitors

Even though the monitor EDID lists 1280x1024 @ 60 Hz, the screen turns blank when using an HDMI connection. This is an issue with the monitor and not the NVIDIA driver.

Because of this issue with the monitor, the NVIDIA driver blocks the problem mode (1280x1024 @ 60 Hz) and makes it unavailable.

Aero Must be Enabled for Windowed SLI AFR Mode Under Vista

Windows 7 Aero must be enabled in order to achieve SLI acceleration using windowed AFR mode.

SLI Connector Requirement on NVIDIA Quadro SLI Cards

The SLI connector that links two SLI cards is needed for proper SLI operation. However, the connector can be removed if you do not intend to enable SLI mode. If you remove the connector, then you must make sure that SLI mode is disabled from the NVIDIA control panel. Enabling SLI mode without the SLI connector installed will result in video corruption.

Image Sharpening Control not Available with GeForce 8 Series and later GPUs

With GeForce 8 Series and later graphics cards, the **Image sharpening** slider on the NVIDIA Control Panel-> Display->Adjust Desktop Color Settings page is grayed out.

This control is intentionally disabled because image sharpening is not supported on GeForce 8 series and later GPUs.

Driver Reports 256 MB Memory on NVIDIA Quadro FX 330 Cards

- **Problem**

When a 64 MB NVIDIA Quadro FX 330 card is installed, the driver reports that the card needs 256 MB, causing 256 MB of address space to be consumed.

- **Explanation**

This is not a bug but a product limitation.

The NVIDIA Quadro FX 330 GPU has some limitations that prevent the card from addressing less than 256 MB of system memory.

Applying Workstation Application Profiles

- **Background**

The workstation application profiles are software settings used by the NVIDIA Display Drivers to provide optimum performance when using a selected application. The profile also works around known application issues and bugs.

If there is an available setting for an application, it should be used, otherwise incorrect behavior or reduced performance is likely to occur.

- **Issues**

Configuration changes require that you restart the application.

Once an application is running, it does not receive notification of configuration changes. Therefore, if you change the configuration while the application is running, you must exit and restart the application for the configuration changes to take effect.

Gigabyte GA-6BX Motherboard

This motherboard uses a LinFinity regulator on the 3.3-V rail that is rated to only 5 A—less than the AGP specification, which requires 6 A. When diagnostics or applications are running, the temperature of the regulator rises, causing the voltage to the NVIDIA chip to drop as low as 2.2 V. Under these circumstances, the regulator cannot supply the current on the 3.3-V rail that the NVIDIA chip requires.

This problem does not occur when the graphics board has a switching regulator or when an external power supply is connected to the 3.3-V rail.

CHAPTER

3

THE RELEASE 186 DRIVER

This chapter covers the following main topics:

- “Hardware and Software Support” on page 15
- “Driver Installation” on page 18

Hardware and Software Support

Supported Operating Systems

The Release 185 driver, version 186.30, has been tested with Microsoft Windows® 7 RC build version 7100, and supports both 32-bit and 64-bit versions.

Supported NVIDIA Products

Table 3.1 and Table 3.2 lists the NVIDIA products supported by the Release 186 driver, version 186.30

Table 3.1 Supported NVIDIA Workstation Products

Product	Windows 7 32-bit	Windows 7 64-bit
NVIDIA Quadro FX 5800	X	X
NVIDIA Quadro FX 5600	X	X
NVIDIA Quadro FX 5500	X	X
NVIDIA Quadro FX 4800	X	X
NVIDIA Quadro FX 4700 X2	X	X
NVIDIA Quadro FX 4600	X	X
NVIDIA Quadro FX 4500 X2	X	X
NVIDIA Quadro FX 4500	X	X
NVIDIA Quadro FX 4400	X	X
NVIDIA Quadro FX 4400G	X	X
NVIDIA Quadro FX 4000	X	X
NVIDIA Quadro FX 3800	X	X
NVIDIA Quadro FX 3700	X	X
NVIDIA Quadro FX 3500	X	X
NVIDIA Quadro FX 3450	X	X
NVIDIA Quadro FX 3400	X	X
NVIDIA Quadro FX 1800	X	X
NVIDIA Quadro FX 1700	X	X
NVIDIA Quadro FX 1500	X	X
NVIDIA Quadro FX 1400	X	X
NVIDIA Quadro FX 580	X	X
NVIDIA Quadro FX 570	X	X
NVIDIA Quadro FX 560	X	X
NVIDIA Quadro FX 550	X	X
NVIDIA Quadro FX 540	X	X
NVIDIA Quadro FX 470	X	X
NVIDIA Quadro FX 380	X	X
NVIDIA Quadro FX 370	X	X
NVIDIA Quadro FX 370 low profile	X	X
NVIDIA Quadro FX 350	X	X
NVIDIA Quadro VX 200	X	X
NVIDIA Quadro CX	X	X
NVIDIA Quadro NVS 450	X	X
NVIDIA Quadro NVS 440	X	X
NVIDIA Quadro NVS 420	X	X
NVIDIA Quadro NVS 295	X	X

Table 3.1 Supported NVIDIA Workstation Products (continued)

Product	Windows 7 32-bit	Windows 7 64-bit
NVIDIA Quadro NVS 290	X	X
NVIDIA Quadro NVS 285	X	X

Table 3.2 Supported NVIDIA Quadro Blade/Embedded Graphics Board Series

Product	Windows Vista 32-bit	Windows Vista 64-bit
NVIDIA Quadro FX 3600M	X	X
NVIDIA Quadro FX 1600M	X	X
NVIDIA Quadro FX 770M	X	X
NVIDIA Quadro FX 560M	X	X
NVIDIA Quadro FX 370M	X	X
NVIDIA Quadro NVS 120M	X	X

Supported Languages

The Release 186 Graphics Drivers supports the following languages in the main driver Control Panel:

English (USA)	German	Portuguese (Euro/Iberian)
English (UK)	Greek	Russian
Arabic	Hebrew	Slovak
Chinese (Simplified)	Hungarian	Slovenian
Chinese (Traditional)	Italian	Spanish
Czech	Japanese	Spanish (Latin America)
Danish	Korean	Swedish
Dutch	Norwegian	Thai
Finnish	Polish	Turkish
French	Portuguese (Brazil)	

Driver Installation

Minimum Hard Disk Space

The hard disk space requirement for 32-bit is minimum 120 MB for English-only, and 185 MB for International.

The hard disk space requirement for 64-bit is minimum 170 MB for English-only, and 230 MB for International.

Before You Begin

If you have previously installed NVIDIA nTune, NVIDIA recommends that you uninstall nTune before installing this driver. After the driver install is complete, you can reinstall NVIDIA nTune.

Installation Instructions

- 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.
- 3 The license agreement dialog box appears.
- 4 Click **Accept** if you accept the terms of the agreement, then either open the file or save the file to your PC and open it later.
- 5 Extract the zip files to a temporary folder on your PC.
- 6 Open the NVIDIA driver installation .EXE file to launch the NVIDIA InstallShield Wizard.
- 7 Follow the instructions in the NVIDIA InstallShield Wizard to complete the installation.

APPENDIX



MODE SUPPORT FOR WINDOWS

This chapter details the Windows modes supported by the Release 186 driver for NVIDIA products. It contains these sections:

- “General Mode Support Information” on page 20
- “Default Modes Supported by GPU” on page 21
- “Modes Supported by TV Encoders” on page 25

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 21.

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
Apple 30" Cinema HD Display (Dual link DVI)	2560x1600 @ 60 Hz
Dell WFP 3007 (Dual Link DVI)	2560x1600 @ 60 Hz
HP LP3065 dual-link DVI flat panel	2560x1600 @ 60Hz.

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:

- “Quadro FX, CX, and NVS Series GPUs” on page 22

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.

Quadro FX, CX, and NVS Series GPUs

This sections lists the supported display resolutions, color depths, and refresh rates for the the products listed in [Table 3.1 on page 16](#) and [Table 3.2 on page 17](#) .

Standard Modes

640 x 480	8	60 70 72 75 85 100 120 140 144 150 170 200 240
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
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
1680 x 1050	8	60
1920 x 1080	8	60
1920 x 1200	8	60 70 72 75 85 100
1920 x 1440	8	60 70 72 75 85
2048 x 1536	8	60

640 x 480	16	60 70 72 75 85 100 120 140 144 150 170 200 240
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
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

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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
1680 x 1050 16 60
1920 x 1080 16 60
1920 x 1200 16 60 70 72 75 85 100
1920 x 1440 16 60 70 72 75 85
2048 x 1536 16 60

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640 x 480 32 60 70 72 75 85 100 120 140 144 150 170 200 240
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 85 100 120 140 144 150 170 200 240
1088 x 612 32 60 70 72 75 85 100 120 140 144 150 170 200 240
1152 x 864 32 60 70 72 75 85 100 120 140 144 150 170 200
1280 x 720 32 60
1280 x 768 32 60 70 72 75 85 100 120 140 144 150 170
1280 x 800 32 60 70 72 75 85 100 120 140 144 150 170
1280 x 960 32 60 70 72 75 85 100 120 140 144 150 170
1280 x 1024 32 60 70 72 75 85 100 120 140 144 150 170
1360 x 768 32 60 70 72 75 85 100 120 140 144 150 170
1600 x 900 32 60 70 72 75 85 100 120 140 144 150
1600 x 1024 32 60 70 72 75 85 100 120
1600 x 1200 32 60 70 72 75 85 100 120
1680 x 1050 32 60
1920 x 1080 32 60
1920 x 1200 32 60 70 72 75 85 100
1920 x 1440 32 60 70 72 75 85
2048 x 1536 32 60

```

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640 x 480 64 60 70 72 75 85 100 120 140 144 150 170 200 240
800 x 600 64 60 70 72 75 85 100 120 140 144 150 170 200 240
848 x 480 64 60 70 72 75 85 100 120 140 144 150 170 200 240
960 x 600 64 60 70 72 75 85 100 120 140 144 150 170 200 240
1024 x 768 64 60 70 72 75 85 100 120 140 144 150 170 200 240
1088 x 612 64 60 70 72 75 85 100 120 140 144 150 170 200 240

```

1152 x 864	64	60	70	72	75	85	100	120	140	144	150	170	200
1280 x 720	64	60											
1280 x 768	64	60	70	72	75	85	100	120	140	144	150	170	
1280 x 800	64	60	70	72	75	85	100	120	140	144	150	170	
1280 x 960	64	60	70	72	75	85	100	120	140	144	150	170	
1280 x 1024	64	60	70	72	75	85	100	120	140	144	150	170	
1360 x 768	64	60	70	72	75	85	100	120	140	144	150	170	
1600 x 900	64	60	70	72	75	85	100	120	140	144	150		
1600 x 1024	64	60	70	72	75	85	100	120					
1600 x 1200	64	60	70	72	75	85	100	120					
1680 x 1050	64	60											
1920 x 1080	64	60											
1920 x 1200	64	60	70	72	75	85	100						
1920 x 1440	64	60	70	72	75	85							
2048 x 1536	64	60											

Modes Supported by TV Encoders

Table A.3 and Table A.4 list the NTSC, PAL, and HDTV TV-Out modes supported by the NVIDIA driver.

Table A.3 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.4 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.