



Release 190 GRAPHICS DRIVERS *Release Notes*

Version 190.62

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

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CHAPTER

1

INTRODUCTION TO *RELEASE NOTES*

This edition of *Release Notes* describes the Release 190 Graphics 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 190 Driver Changes](#)” on page 3 gives a summary of changes, and fixed and open issues in this version.
- “[The Release 190 Driver](#)” on page 17 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 23 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 190.62, and lists changes made to the driver since version 186.18. These changes are discussed beginning with the chapter “[Release 190 Driver Changes](#)” on page 3.

CHAPTER

2

RELEASE 190 DRIVER CHANGES

This chapter describes open issues for version 190.62, and resolved issues and driver enhancements for versions of the Release 190 driver up to version 190.62. The chapter contains these sections:

- “Version 190.62 Highlights” on page 4
- “Changes in Version 190.62” on page 8
- “Changes in Version 190.38” on page 9
- “Open Issues in Version 190.62” on page 10
- “Not NVIDIA Issues” on page 12
- “Known Product Limitations” on page 15

Version 190.62 Highlights

This section provides highlights of version 190.62 of the NVIDIA Release 190 Driver for Windows 7.

- [What's New in Release 190](#)
- [What's New in Version 190.62](#)
- [Limitations in This Release](#)

What's New in Release 190

The section summarizes the following driver changes in Release 190:

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

NVIDIA Control Panel Updates

Display Settings Pages—Organizational Changes

- The following pages have been revised to include TV settings controls:
 - **Adjust Desktop Color Settings**
Now includes controls to adjust TV color settings.
 - **Change Resolution**
Now includes controls to adjust TV and HDTV signal formats and resolution.
 - **Adjust Desktop Size and Position**
Now includes controls to adjust the TV screen size and position, and to resize the HDTV desktop.
- The following pages and links now appear in the Display category:
 - **HDCP Status** page
 - **Digital Audio** page
- The controls in the Manage Custom Resolutions page are now located in the **Change Resolution** page.

Display Settings Pages - Feature Changes

- **Adjust Desktop Color Settings** page

For Geforce 8 series and later GPUS, the Digital Vibrance range is extended to include the black and white limit which now corresponds to 0%. The new default value is 50%.

- After resizing the HDTV desktop, the new resolution created is now added to the list of available resolutions for that display, and also added to the resolution list within the game or application.

Video & Television Pages

- The following pages and controls have been moved to the Display category:
 - **Adjust Television Color Settings** page (see Display->Adjust Desktop Color Settings)
 - **Change the signal or HD format** page (see Display->Change Resolution)
 - **Select Digital color format** page (see Display->Change Resolution)
 - **Adjust screen size and position** page (see Display->Adjust Desktop Size and Position)
 - **Resize HDTV desktop** page (see Display->Adjust Desktop Size and Position)
 - **HDCP Status** page
 - **Digital Audio** page

3D Settings Pages

- **Preferred Refresh Rate** lets you override the refresh rate limitations imposed by the 3D application for the indicated monitor.
- **Power Management mode**

Many NVIDIA graphics cards support multiple performance levels so that the PC can save power when full graphics performance is not required. To provide more control over these power management capabilities, NVIDIA has added the Power Management Mode control. The control consists of two settings—*Adaptive* and *Prefer Maximum Performance*.

Adaptive: This is the default setting in which the graphics card monitors GPU usage and seamlessly switches between modes based on the performance demands of the application. This allows the GPU to always use the minimum amount of power required to run a given application, and can allow even older 3D games to run in lower power modes if the game does not require full 3D performance. NVIDIA recommends this setting for best overall balance of power and performance.

Prefer Maximum Performance: This setting lets you maintain the card at its maximum performance level when 3D applications are running regardless of GPU usage. This option can be set Globally (for all 3D applications), or an application profile can be created under Program Settings to set the preference for a particular 3D application.

This feature is supported only on select GeForce 9 Series and later GPUs and applies only to DirectX and OpenGL-based applications.

Display Driver Updates

- Added support for hardware overlays on both Clone mode displays.

Previously, the driver supported only one hardware overlay, so only one Clone mode display could present the video overlay.

- EDID Override (for monitor manufacturers)

The graphics driver now can use Extended Display Identification Data (EDID) overrides provided by the monitor manufacturers. These overrides are updated EDIDs contained within the monitor INF.

Refer to the Microsoft white paper http://www.microsoft.com/whdc/device/display/edid_over.msp.

CUDA Updates

- Added support for 64-bit video encoding.
- Added support to make all GPUs within an SLI group available for CUDA applications to use.

OpenGL Updates

- Added support for OpenGL 3.1

What's New in Version 190.62

- This driver version adds support for NVIDIA PhysX acceleration on all GeForce 8-series, 9-series, 100-series, and 200-series GPUs with a minimum of 256MB dedicated graphics memory and a minimum of 32 processor cores (this driver package installs NVIDIA PhysX System Software v9.09.0814).
- See [“Changes in Version 190.62” on page 8](#) for a list of resolved issues.

Limitations in This Release

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

- **NVIDIA Control Panel Display Category**
 - The Graph tab on the Adjust Desktop Color Settings page is not available.

Changes in Version 190.62

The following sections list the changes made and issues resolved since driver version 190.38.

The NVIDIA bug number is provided for reference.

Fixed Issues–Windows 7 (32-bit)

Single GPU Resolved Issues

- GeForce 9500 GS: With a VGA and S-Video display connected in Clone mode, the NVIDIA Control Panel Change Resolution controls do not work. [558589]

Fixed Issues Windows 7 (64-bit)

Multi-GPU Resolved Issues

- [Quad-SLI], GeForce 7950 GX2: Quad SLI cannot be enabled when the NVIDIA Control Panel is maximized. [575191]

Changes in Version 190.38

The following sections list the changes made and issues resolved since driver version 186.18.

The NVIDIA bug number is provided for reference.

Fixed Issues–Windows 7 (32-bit)

Single GPU Resolved Issues

- GeForce GTX 285: When setting a custom resolution on the secondary Dualview display using the NVIDIA Control Panel “Manage Custom Resolutions” page, the primary display switches to the newly created resolution. [539807]

Fixed Issues Windows 7 (64-bit)

Single GPU Resolved Issues

- GeForce GTX 285: When setting a custom resolution on the secondary Dualview display using the NVIDIA Control Panel “Manage Custom Resolutions” page, the primary display switches to the newly created resolution. [539807]

Open Issues in Version 190.62

As with every released driver, version 190.62 of the Release 190 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 may have workaround solutions.

- “Windows 7 32-bit Issues” on page 10
- “Windows 7 64-bit Issues” on page 11

Windows 7 32-bit Issues

Single GPU Issues

- 3D Vision: The system may hang if you turn on or off stereoscopic 3D effects while in a game, such as by pressing [Ctrl+T] or pressing the 3D Vision emitter button. [587642]

This does not occur with 3D Vision Discover, but only with 3D Vision when using 120 Hz projectors, LCD displays, or analog CRTs.

To work around the issue, use a previous driver version or make sure you are not in a game when turning on or off the Stereoscopic 3D effects. This issue will be fixed in the next driver release.

- After creating a custom resolution with refresh rate of 59 Hz, the new resolution appears in the Add Resolutions page at 60 Hz and the corresponding check box is not checked. [571459]
- GeForce GTX 280: Assassin's Creed (DirectX 10)—the game hangs at the main menu screen when Ambient Occlusion is activated from the NVIDIA Control Panel. [545516]
- GeForce 200 Series, GeForce 9800 GX2: Changes to the NVIDIA Control Panel->Manage 3D Settings->Override Antialiasing control do not get applied when playing most DirectX 9 games in windowed mode. [555282]
- GeForce 9800 GX2: Sid Meier's Railroads—the RADAR graphic becomes corrupt after changing the in-game antialiasing level while in a game. [569877]
- GeForce 9800 GTX: Far Cry 2—with the in-game resolution set to 1920x1200 and antialiasing set to 2x or higher, there is corruption when looking up at the sky. [555163]
- GeForce 8 Series: When using the S-Video connection, upon changing the resolution to 1024x768 or 800x600 the screen turns blank.[584896]

Multi-GPU Issues

- [SLI], GeForce 9800 GX2: World in Conflict–grass textures flicker. [544657]
- [SLI], GeForce 9500 GT: With SLI enabled and two displays enabled on the primary GPU, the display output cannot be switched to a display connected to the secondary GPU. [587206]

Windows 7 64-bit Issues

Single GPU Issues

- GeForce 200 Series, NVIDIA Control Panel: After installing the driver, the preview animation (NVIDIA spinning logo) is missing from the Adjust Image Settings with Preview page, the screen flickers when navigating to another page, and Windows Aero cannot be enabled.[566196]

The issue goes away after you reboot the system.

- GeForce GTX 280: Assassin's Creed (DirectX 10)–the game hangs at the main menu screen when Ambient Occlusion is activated from the NVIDIA Control Panel. [545516]
- GeForce 9800 GTX: Arma 2–textures are blurry.[582287]
- GeForce 8 Series: When using the S-Video connection, upon changing the resolution to 1024x768 or 800x600 the screen turns blank.[584896]

Multi-GPU Issues

- [SLI], GeForce 200 Series: With two displays connected in Dualview mode, changes to the NVIDIA Control Panel-> Adjust Desktop Color Settings->NVIDIA settings are not preserved after enabling or disabling SLI mode. [554097]
- [SLI], GeForce 200 Series: When adding a display in extended mode, it automatically becomes the primary display. [583031]
- [SLI], GeForce 8600 GT: Gears of War (DirectX 10)–with SLI mode enabled, there is corruption and flickering with the default settings and in-game antialiasing enabled. [541836]

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 12
- “Feature Differences from Windows Vista” on page 13
- “OpenGL Application Issues” on page 14
- “Application Issues” on page 14

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)
- **NVIDIA nView Desktop Manager**

The nView Desktop Manager will not be included in drivers for GeForce products.

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/Windows 7
 - 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.

Application Issues

- World of Warcraft—if you have run the 3D Vision setup wizard, then the game automatically enables 3D stereo even after you disable it.

To work around this issue, you must uninstall the 3D Vision driver.

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:

- “Automatic Desktop Scaling for Analog Displays” on page 15
- “GeForce GTX 295 Fan Control and NVIDIA Control Panel Performance Group version 6.03.06.00” on page 15
- “1280x1024 @ 60 Hz not Available on BenQ FP241W Monitors” on page 15
- “Image Sharpening Control not Available with GeForce 8 Series and later GPUs” on page 15
- “Gigabyte GA-6BX Motherboard” on page 16

Automatic Desktop Scaling for Analog Displays

(As of Release 185) To prevent unsupported timings from being applied to digital displays that use the analog (VGA) connection, the Windows 7 driver scales the desktop automatically.

This limits the available resolutions to those supported in the monitor EDID. While not recommended, you can attempt to set other resolutions by creating and then applying a custom resolution using the NVIDIA Control Panel Change Resolution page.

In a future driver release, controls will be available in the NVIDIA Control Panel to let you select the scaling method.

GeForce GTX 295 Fan Control and NVIDIA Control Panel Performance Group version 6.03.06.00

The GeForce GTX 295 fan control does not function properly when using the NVIDIA Control Panel Performance Group version 6.03.06.00. For proper fan control, use version 6.03.12.00 or later.

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.

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.

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 190 DRIVER

This chapter covers the following main topics:

- “Hardware and Software Support” on page 17
- “Driver Installation” on page 21

Hardware and Software Support

Supported Operating Systems

The Release 190 driver, version 190.62, 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 lists the NVIDIA products supported by the Release 190 driver, version 190.62

Table 3.1 Supported NVIDIA Products

Consumer Products

GeForce GTX 295
GeForce GTX 285
GeForce GTX 280
GeForce GTX 275
GeForce GTX 260
GeForce GTS 250
GeForce GT 140
GeForce GT 130
GeForce GT 120
GeForce 9800 GX2
GeForce 9800 GTX+
GeForce 9800 GTX
GeForce 9800 GT
GeForce 9600 GT
GeForce 9600 GS
GeForce 9600 GSO
GeForce 9500 GT
GeForce 9500 GS
GeForce 9400 GT
GeForce 9400
GeForce 9300 GS
GeForce 9300 GE
GeForce 9300
GeForce 9200
GeForce 8800 Ultra
GeForce 8800 GTX
GeForce 8800 GTS 512
GeForce 8800 GTS
GeForce 8800 GT
GeForce 8800 GS
GeForce 8600 GTS
GeForce 8600 GT
GeForce 8600 GS
GeForce 8500 GT
GeForce 8400 GS
GeForce 8400 SE
GeForce 8400
GeForce 8300 GS
GeForce 8300
GeForce 8200
GeForce 8100 / nForce 720a

Table 3.1 Supported NVIDIA Products**Consumer Products**

nForce 780a SLI
nForce 760i SLI
nForce 750a SLI
nForce 730a
GeForce 7950 GX2
GeForce 7950 GT
GeForce 7900 GTX
GeForce 7900 GT/GTO
GeForce 7900 GS
GeForce 7800 SLI
GeForce 7800 GTX
GeForce 7800 GT
GeForce 7800 GS
GeForce 7650 GS
GeForce 7600 GT
GeForce 7600 GS
GeForce 7600 LE
GeForce 7500 LE
GeForce 7350 LE
GeForce 7300 SE
GeForce 7300 LE
GeForce 7300 GT
GeForce 7300 GS
GeForce 7200 GS
GeForce 7100 GS
GeForce 7150 / NVIDIA nForce 630i
GeForce 7100 / NVIDIA nForce 630i
GeForce 7050 / NVIDIA nForce 620i
GeForce 7050 / NVIDIA nForce 610i
GeForce 7100 / NVIDIA nForce 620i
GeForce 7050 PV / NVIDIA nForce 630a
GeForce 7050 PV / NVIDIA nForce 630a
GeForce 7025 / NVIDIA nForce 630a
GeForce 6800 XT
GeForce 6800 XE
GeForce 6800 Ultra
GeForce 6800 Series GPU
GeForce 6800 LE
GeForce 6800 GT
GeForce 6800 GS/XT
GeForce 6800 GS
GeForce 6800
GeForce 6700 XL
GeForce 6610 XL
GeForce 6600 VE
GeForce 6600 LE

Table 3.1 Supported NVIDIA Products**Consumer Products**

GeForce 6600 GT
 GeForce 6600
 GeForce 6500
 GeForce 6250
 GeForce 6200SE TurboCache™
 GeForce 6200 TurboCache™
 GeForce 6200 LE
 GeForce 6200 A-LE
 GeForce 6200
 GeForce 6150SE nForce 430
 GeForce 6150 LE
 GeForce 6150
 GeForce 6100 nForce 420
 GeForce 6100 nForce 405
 GeForce 6100 nForce 400
 GeForce 6100

Supported Languages

The Release 190 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 105 MB for English-only, and 142 MB for International.

The hard disk space requirement for 64-bit is minimum 135 MB for English-only, and 170 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 190 driver for NVIDIA products. It contains these sections:

- “General Mode Support Information” on page 24
- “Default Modes Supported by GPU” on page 25
- “Modes Supported by TV Encoders” on page 28

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 25.

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:

- “GeForce 200, 100, 9 Series, 8 Series, 7 Series, 6 Series, and nForce 7xx/6xx GPUs” on page 26

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
-----	-----	-----
1024 x 768	32 60 70 72 75 85 100 120 140 144 150 170 200	

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 200, 100, 9 Series, 8 Series, 7 Series, 6 Series, and nForce 7xx/6xx GPUs

This sections lists the supported display resolutions, color depths, and refresh rates for the the products listed in [Table 3.1 on page 18](#).

Standard Modes

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	
800 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
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
720 x 480	16		60
720 x 576	16	50	
800 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
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
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

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	
800 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
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

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.