



NVIDIA QUADRO PROFESSIONAL GRAPHICS SOLUTIONS DISPLAY RESOLUTION SUPPORT

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Application Note



DOCUMENT CHANGE HISTORY

DA-05265-001_v03

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01	May 18, 2010	VL, SM	Initial Release
02	March 10, 2011	SF, AS, SM	•Updated with Quadro Fermi products
03	March 25, 2011	FP, SM	•Updated Table 1, Table 3, and Table 4

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OVERVIEW

This application note lists the display resolutions capable of being supported by the latest generation of NVIDIA Quadro® Professional Graphics Solutions. The model numbers of the different Quadro® products that are supported in this application note are listed in Table 1. In addition, this application note calls out the different display technologies that are supported by the various Quadro products, along with the maximum resolutions that can be supported via the different native display connectors and display dongles and adapters.

The resolutions listed in this application note represent the standard modes that are supported by the listed Quadro Professional Graphics Solutions through the available display interfaces.

Current monitors have the ability to expose what resolutions are supported to the attached graphics card. From this information, a list of valid resolutions are generated and used (EDID – Extended Display Identification Data) by the operating system. NVIDIA® products will automatically enable these resolutions as long as they fall within the hardware capabilities of that specific NVIDIA product.



Note: Depending on the specific display panel and display interface used to connect to the Quadro graphics solution, all the resolutions listed in the resolution table(s) may not be available in the NVIDIA Display Control Panel. Alternately, depending on the specific connector monitor, additional modes not listed in the resolution tables may be available for selection in the NVIDIA Display Control Panel (Figure 1).

In special cases, more resolutions can be custom added by the user and made available, using the **Add Resolution** button on the **Change Resolution** Display Control Panel page. Any new resolution can be added by the user, as long as they fall within the hardware capabilities of the specific Quadro products. The process of adding custom resolutions is

quite self explanatory and can be set using the NVIDIA Control Panel (Figure 2, Figure 3, and Figure 4). For more information on adding custom resolutions, refer to the online help section available in the NVIDIA Control Panel.

Note: Online Help can be accessed by pressing F1 in the NVIDIA Control Panel.

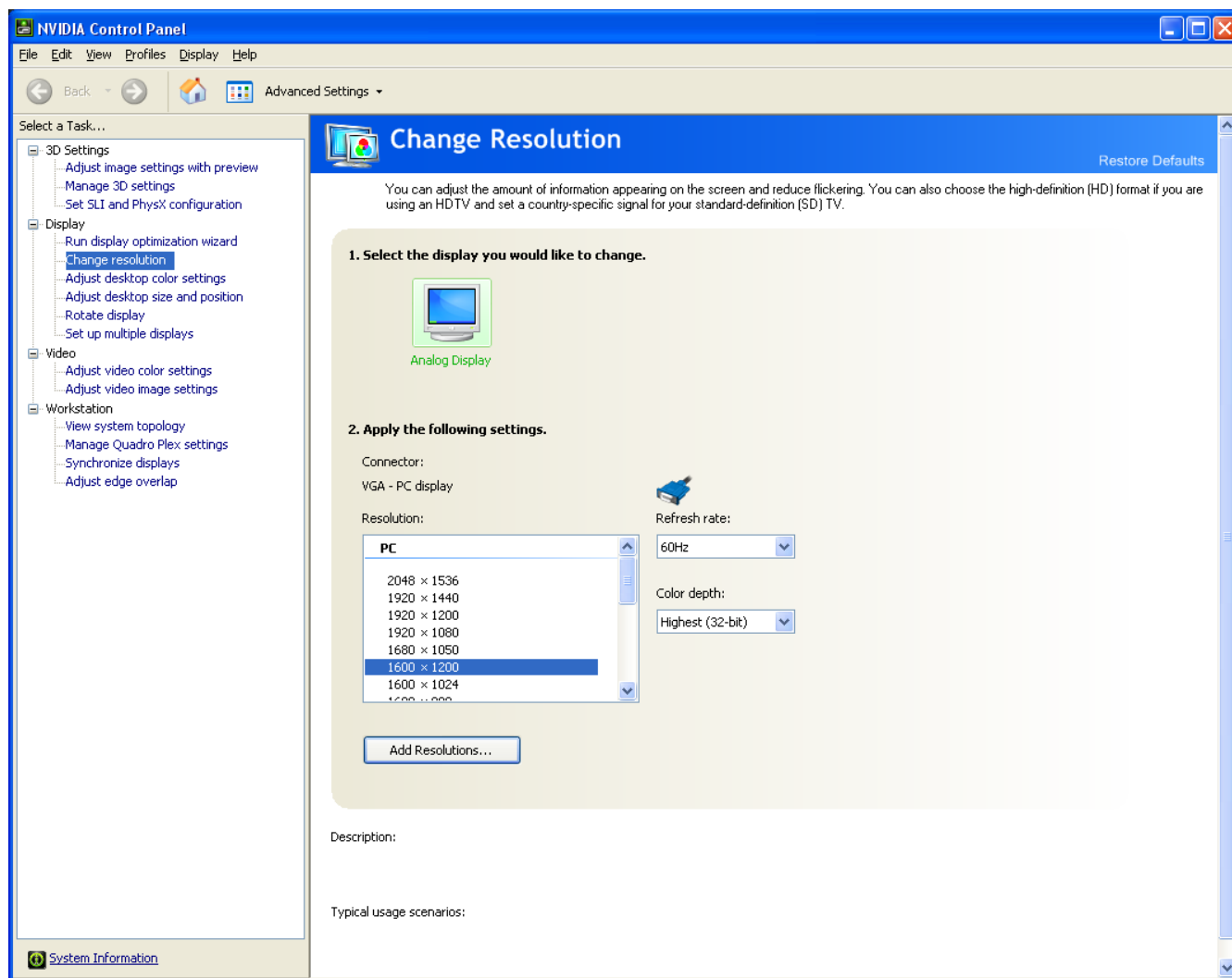


Figure 1. NVIDIA Control Panel: Change Resolution Page

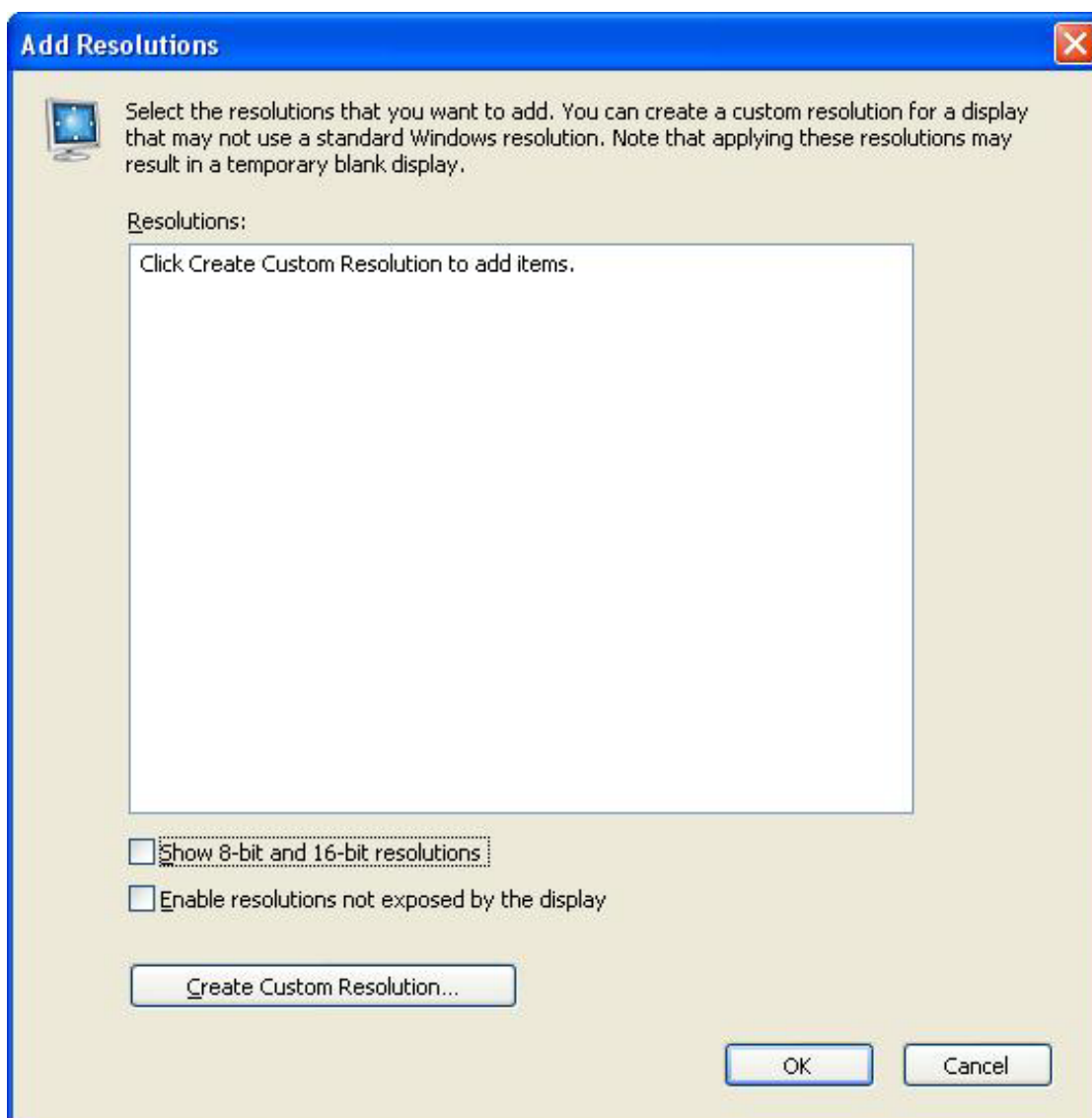


Figure 2. NVIDIA Control Panel: Add Resolutions

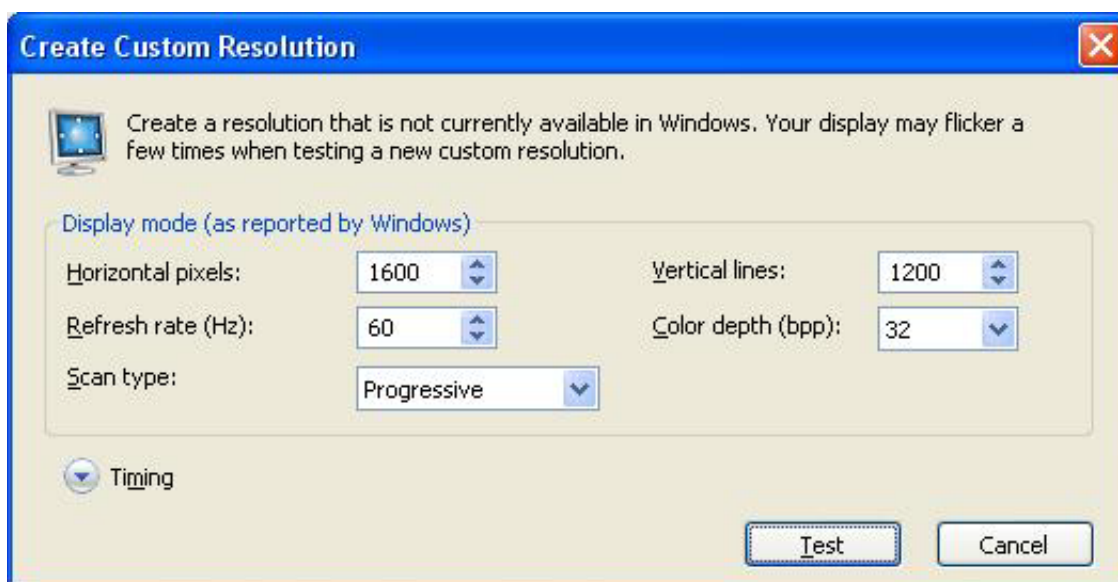


Figure 3. Create Custom Resolutions Page

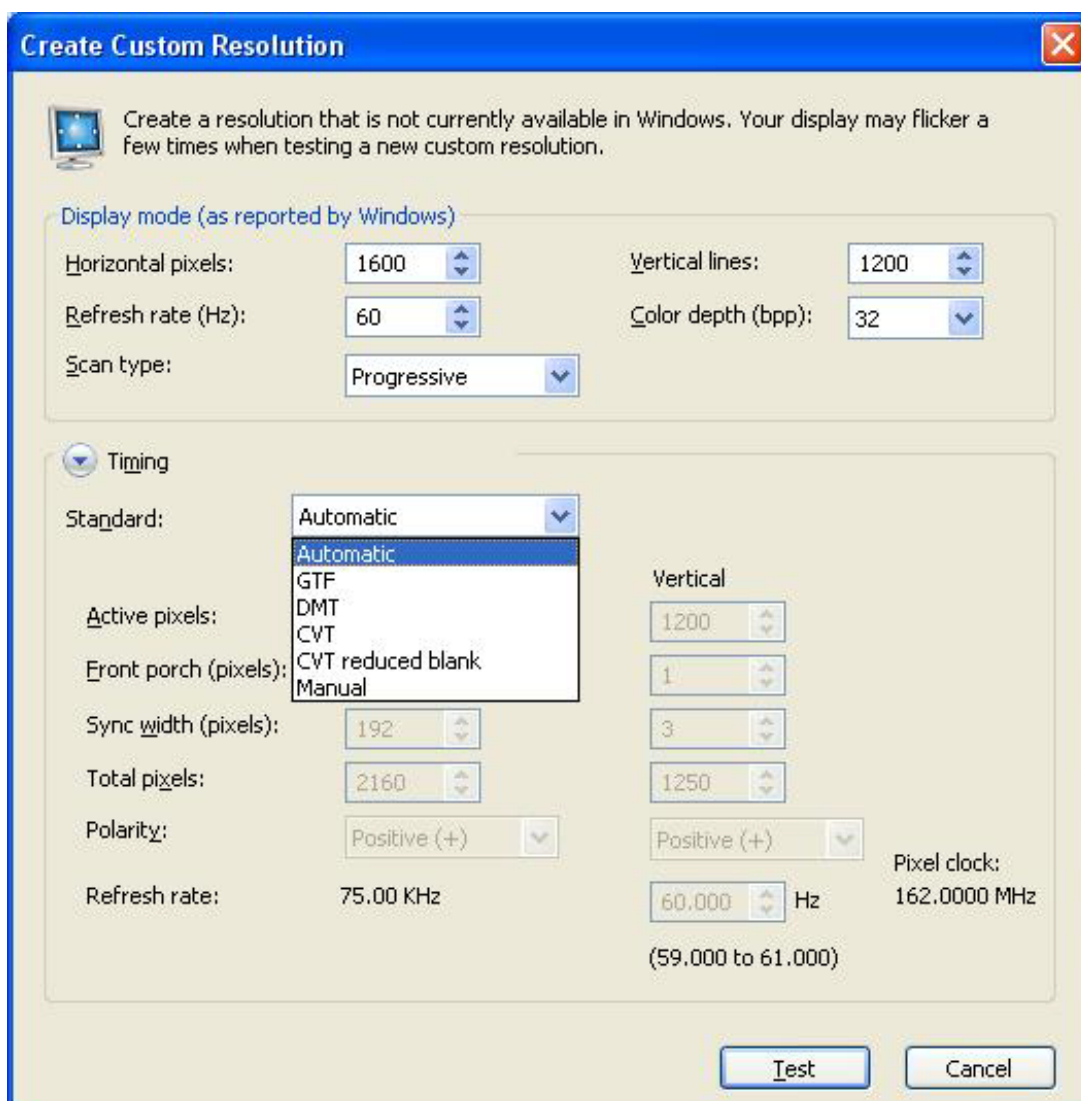


Figure 4. Alternative Create Custom Resolutions Page



Note: Linux users will need to add a monitor specific mode line.

Note: The entire NVIDIA Control Panel' images shown in this application note are for the Windows XP (64-bit) Operating System version. The NVIDIA Control Panel for alternate Windows Operating Systems, will be similar, but may not be exactly the same as shown in Figure 1 through Figure 4.

RESOLUTION TABLES

This section lists the different NVIDIA Quadro Professional Graphics Solutions whose display capabilities are covered in this application note. Legacy Quadro products are not covered in this application. However, the display resolution table for legacy Quadro products can be found in the *NVIDIA Quadro GPUs Resolution Tables Application Note* (document number DA-00591-002). Contact your NVIDIA Sales Representative or Field Application Engineer (FAE) to get access to this application note.

The various products covered in this application note are listed in Table 1. This table calls out the different display interface technologies supported, either natively or via a dongle / adaptor, by the respective Quadro products.

The following key legend is for Table 1.

- ▶ Y – Display supported natively (display interface available on the graphics product).
- ▶ D – Display supported via a dongle (either active or passive).
- ▶ N – Display technology not supported (either natively or via dongles).
- ▶ (#) – The number inside the parenthesis represents the number of connectors of the specific display connector available on the specific graphics solution.

Table 1. Display Capability Support for Quadro Professional Graphics Solutions

	VGA	Single-Link DVI	Dual-Link DVI	DisplayPort
Quadro Fermi				
Quadro 6000	D(1)	Y(1)	Y(1)	Y(2)
Quadro 5000	D(1)	Y(1)	Y(1)	Y(2)
Quadro 4000	D(1)	Y(1)	Y(1)	Y(2)
Quadro 2000	D(1)	Y(1)	Y(1)	Y(2)
Quadro 2000D	D(2)	Y(2)	Y(2)	N
Quadro 4000 Mac	D(1)	Y(1)	Y(1)	Y(1)
Quadro 600	D(1)	Y(1)	Y(1)	Y(1)
Quadro 400	D(1)	Y(1)	Y(1)	Y(1)
Quadro FX PCIe				
Quadro FX 5800	D(2)	Y(2)	Y(2)	Y(1)
Quadro FX 4800	D(1)	Y(1)	Y(1)	Y(2)
Quadro CX	D(1)	Y(1)	Y(1)	Y(2)
Quadro 4800 Mac	D(2)	Y(2)	Y(2)	N
Quadro FX 5600	D(2)	Y(2)	Y(2)	N
Quadro FX 4600	D(2)	Y(2)	Y(2)	N
Quadro FX 3800	D(1)	Y(1)	Y(1)	Y(2)
Quadro FX 3700	D(2)	Y(2)	Y(2)	N
Quadro FX 1800	D(1)	Y(1)	Y(1)	Y(2)
Quadro FX 1700	D(2)	Y(2)	Y(2)	N
Quadro FX 580	D(1)	Y(1)	Y(1)	Y(2)
Quadro FX 570	D(2)	Y(2)	Y(2)	N
Quadro FX 380	D(2)	Y(2)	Y(2)	N
Quadro FX 380 LP	D(1)	Y(1)	Y(1)	Y(1)
Quadro FX 370	D(2)	Y(1)	Y(1)	N
Quadro FX 370 Low Profile (active)	D(2)	D(2)	N	N
Quadro FX 370 Low Profile (passive)	D(2)	D(2)	N	N
Quadro NVS				
Quadro NVS 450	D(4) DP->VGA	D(4) DP-DVI-SL	D(4) DP->DVI-DL	Y(4)
Quadro NVS 420 x16	D*(4) DP->VGA	D(4)	D*(4) DP-> DVI-DL	D(4)
Quadro NVS 420 x1	D*(4) DP->VGA	D(4)	D*(4) DP-> DVI-DL	D(4)
NVS 300 x16	D(2)	D(2)	N	D(2)

	VGA	Single-Link DVI	Dual-Link DVI	DisplayPort
NVS 300 x1	D(2)	D(2)	N	D(2)
Quadro NVS 295 x16	D(2)	D(2)	D(2)	Y(2)
Quadro NVS 295 x1	D(2)	D(2)	D(2)	Y(2)
Quadro NVS 290 x16	D(2)	D(2)	N	N
Quadro NVS 290 x1	D(2)	D(2)	N	N
Quadro Workstation Blades and EGBs				
Quadro FX 370M Blade	Y (1)	Y (2)	N	N
Quadro FX 770M Blade	Y (1)	Y (2)	Y	N
Quadro FX 1600M Blade	Y (1)	Y (2)	Y	N
Quadro FX 3600M Blade	Y (1)	Y (2)	Y	N
Quadro FX 880M Blade	Y (1)	D	D	Y (2)
Quadro FX 2800M Blade	Y (1)	D	D	Y (2)

Note 1: Native single-link and dual-link DVI means support for DVI-I as well as DVI-D.

Note 2: All Quadro FX and Quadro NVS (except NVS 4xx series) products can support a maximum of 2 screens natively or via dongles simultaneously.

Note 3: * - these display technologies can be supported using 2 dongles in a series.

DEFAULT MODES SUPPORTED BY GPUS

This section lists the modes that are included by default in the NVIDIA driver INF for the Quadro Professional Graphics Solutions product family listed in Table 1

Table 2 lists the default (and most commonly available) resolutions that are supported in the NVIDIA drivers via the different display interfaces. The resolutions listed in Table 2 assume a refresh rate of 60 Hz and a standard 24 bits per pixel color depth. Any changes to the color depth (for example, going up to 30 bits per pixel) or refresh rates (for example, 60 Hz to 120 Hz) will impact the list of resolutions that are supported.

As mentioned earlier in this application note, depending on the resolutions supported by the specific monitor connected to the Quadro graphics product:

- All the modes listed in the resolution table (Table 2) may not be available in the NVIDIA Display Control Panel.
- Furthermore, additional (non standard) modes available on a specific monitor may be available for selection in the NVIDIA Display Control Panel.

Table 2. Display Resolutions

Resolution	Single-Link DVI	VGA	Dual-Link DVI	DisplayPort
640 x 480	/	/	/	/
720 x 480	/	/	/	/
720 x 576	/	/	/	/
800 x 600	/	/	/	/
1024 x 768	/	/	/	/
1152 x 864	/	/	/	/
1280 x 720	/	/	/	/
1280 x 768	/	/	/	/
1280 x 800	/	/	/	/
1280 x 960	/	/	/	/
1280 x 1024	/	/	/	/
1360 x 768	/	/	/	/
1366 x 768	/	/	/	/
1600 x 900	/	/	/	/
1600 x 1024	/	/	/	/
1600 x 1200	/	/	/	/
1680 x 1050	/	/	/	/
1920 x 1080	/	/	/	/
1920 x 1200	/	/	/	/
1920 x 1440		/	/	/
2048 x 1152	/	/	/	/
2048 x 1536		/	/	/
2560 x 1440			/	/
2560 x 1600			/	/

MAXIMUM RESOLUTIONS

The maximum resolution supported by a Quadro graphics processor is a factor of the following 3 factors.

- ▶ Bandwidth of the display connector
- ▶ Color depth of the pixels
- ▶ Refresh rate of the monitor

The maximum resolution that can be supported by a specific Quadro FX or Quadro NVS product is directly related to the display connector as well as the various monitor settings.

The following tables list out example of maximum resolutions supported through:

- ▶ The different display connectors (Table 3) present natively on the various Quadro FX and Quadro NVS products.
- ▶ The various display dongles that are supported by the Quadro FX and Quadro NVS products (Table 4).

Table 3. Maximum Resolutions for Native Display Connectors

Display Connector	Maximum Resolution
Single-link DVI	1920 x 1200 at 60 Hz (24 bits per pixel)
Dual-link DVI	2560 x 1600 at 60 Hz (24 bits per pixel) or 1920 x 1080 at 120Hz (24 bits per pixel)
VGA	2048 x 1536 at 85 Hz (24 bits per pixel)
DisplayPort	2560 x 1600 at 60 Hz (30 bits per pixel)

Table 4. Maximum Resolutions for Display Dongles

Dongle Type	Maximum Resolution
DisplayPort to single-link DVI-D	1920 x 1200 at 60 Hz (24 bits per pixel)
DisplayPort to dual-link DVI-D 270 MHz	2560 x 1600 at 60 Hz (24-bits per pixel)
DisplayPort to dual-link DVI-D 330 MHz	1920 x 1080 at 120Hz (24 bits per pixel)
DisplayPort to VGA	1920 x 1200 at 60 Hz (24 bits per pixel)
DVI to VGA	2048 x 1536 at 85 Hz (24-bits per pixel)
DMS59 to 2× DVI-I	1920 x 1200 at 60 Hz (24 bits per pixel)
DMS59 to 2× DisplayPort	2560 x 1600 at 60 Hz (30 bits per pixel)
DMS59 to 2× VGA	2048 x 1536 at 85 Hz (24 bits per pixel)
VHDCI to 4× DVI-D	1920 x 1200 at 60 Hz (24 bits per pixel)
VHDCI to 4× DisplayPort	2560 x 1600 at 60 Hz (30 bits per pixel)

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