User's Manual

Rev. 103
12MM-R6900S-103AR

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DECLARATION OF CONFORMITY

FC

Date: Feb 11, 2011

Supplementary Information:

FCC Part 15, Subpart B, Section 15.107(a) and Section 15.209 for Class B digital devices.

FCC Part 15, Subpart B, Section 15.107(a) and Section 15.209 for Class A digital devices.

The model number of the product is GV-R697OC-2GD.

The product name is VGA Card.

Responsible Party Name: CTR INC (USA)

Address: 1763 Baldwin Street

City of Industry, CA 91748

Phone/Fax: (818) 854-9338/ (818) 854-9393

Representative Person's Name: BAE LLC

FCC ID: GV-R697OC-2GD

VGA Card

GV-R697OC-2GD

Feb. 11, 2011
March 31, 2011

VGA Card
GV-R697OC2-2GD

Supplemental Information:
(a) Class B Digital Device
(b) PCC Part 15, Subpart B, Section 15.105(a) and Section 15.109
(c) Model Number: GV-R697OC2-2GD
(d) Product Name: VGA Card

Customer Service: (818) 854-9338 (818) 854-9339
Address: 1735 Railroad Street, CA 91745
Responsible Party Name: GBT INC (USA)

Per FCC Part 2 Section 2.1074(a)

DECLARATION OF CONFORMITY
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1. Introduction

1.1. Features

- Powered by AMD Radeon™ HD 6970 / 6950 Graphics Processing Unit (GPU)
- Supports PCI Express 2.1
- Integrated with 1GB GDDR5 memory (for GV-R695OC-1GD/GV-R695UD-1GD)
- Integrated with 2GB GDDR5 memory (for GV-R697OC2-2GD/GV-R697OC-2GD)
- Supports DirectX 11
- Supports CrossFireX™
- Supports DVI-I / DVI-D / HDMI / Display portx1
- Supports Dual-Link DVI-I connector
- Supports D-Sub connectors (by adapter)
- Supports HDMI connector
- Supports Display portx1

1.2. Minimum System Requirements

- Hardware
  - Intel® Pentium® 4/Core™ 2 or AMD Athlon™ /Phenom™
  - 1 GB or more of system memory for best performance
  - Optical drive for software installation (CD-ROM or DVD-ROM drive)
  - A power supply that provides at least 550-watt and with one 75w 2x3-pin PCIe power and one 150w 2x4 pin PCIe power connector is required. The power supply should be with a known brand and certified to conform to safety regulations. (For the list of certified power supplies, go to http://ati.amd.com/certifiedpsu.)
  - A power supply that provides at least 500-watt and with two 75w 2x3-pin PCIe power connector is required. The power supply should be with a known brand and certified to conform to safety regulations. (For the list of certified power supplies, go to http://ati.amd.com/certifiedpsu.)

- Operating System
  - Windows® 7
  - Windows® Vista
  - Windows® XP with Service Pack 2 (SP2)
  - Windows® XP Professional x64 Edition

- CrossFireX™ Configuration
  If you are planning on using this graphics card as part of a CrossFireX system, the following is required:
  - A CrossFireX certified motherboard with two PCI Express x16 slots and correct chipset driver
  - Two GV-R697OC2-2GD/GV-R697OC-2GD/GV-R695OC-1GD/GV-R695UD-1GD
  - A power supply that provides at least 600-watt and with two 2x3-pin PCIe power and two2x4 pin PCIe power connectors is required. The power supply should be with a known brand and certified to conform to safety regulations. (For the list of certified power supplies, go to http://ati.amd.com/certifiedpsu.)
  - A power supply that provides at least 600-watt and with four 2x3-pin PCIe power connectors is required. The power supply should be with a known brand and certified to conform to safety regulations. (For the list of certified power supplies, go to http://ati.amd.com/certifiedpsu.)
  - One or two CrossFire bridge interconnect cables
2. Hardware Installation

2.1. Board Layout

1. GV-R697OC2-2GD
2. GV-R697OC-2GD

CrossFire Connector
DisplayPort Connector
HDMI Connector
DVI-D Connector
DVI-I Connector

Digital LCD Monitor
HDMI TV
Digital LCD Monitor
Analog LCD Monitor
Analog Monitor

DVI-I to D-Sub Adapter
D-Sub Output

DisplayPort Connector
HDMI Connector
DVI-I Connector
DVI-D Connector
3. GV-R695OC-1GD

CrossFire Connector

DisplayPort Connector
HDMI Connector
DVI-D Connector
DVI-I Connector

Digital LCD Monitor
HDMI TV
Digital LCD Monitor

or

Analog LCD Monitor
Analog Monitor

DVI Output

D-Sub Output

DVI-I to D-Sub Adapter

DisplayPort Connector
HDMI Connector
DVI-I Connector
DVI-D Connector
3. GV-R695UD-1GD

CrossFire Connector
DisplayPort Connector
HDMI Connector
DVI-D Connector
DVI-I Connector

Digital LCD Monitor
HDMI TV
DVI Output

Analog LCD Monitor
D-Sub Output
DVI-I to D-Sub Adapter

DisplayPort Connector
HDMI Connector
DVI-I Connector
DVI-D Connector

Hardware Installation
Expansion cards contain very delicate Integrated Circuit (IC) chips. To protect them against damage from static electricity, you should follow some precautions whenever you work on your computer.

1. Turn off your computer and unplug power supply.
2. Use a grounded wrist strap before handling computer components. If you do not have one, touch both of your hands to a safely grounded object or to a metal object, such as the power supply case.
3. Place components on a grounded antistatic pad or on the bag that came with the components whenever the components are separated from the system.

The card contains sensitive electric components, which can be easily damaged by static electricity, so the card should be left in its original packing until it is installed. Unpacking and installation should be done on a grounded anti-static mat. The operator should be wearing an anti-static wristband, grounded at the same point as the anti-static mat.

Inspect the card carton for obvious damage. Shipping and handling may cause damage to your card. Be sure there are no shipping and handling damages on the card before proceeding.

⚠️ DO NOT APPLY POWER TO YOUR SYSTEM IF THE GRAPHICS CARD IS DAMAGED.

⚠️ In order to ensure that your graphics card can work correctly, please use official GIGABYTE BIOS only. Using non-official GIGABYTE BIOS might cause problem(s) on the graphics card.
2.2. Hardware Installation

Now that you have prepared your computer, you are ready to install your graphics card.

Step 1.
Locate the PCI Express x16 slot. If necessary, remove the metal cover from this slot; then align your graphics card with the PCI Express x16 slot, and press it in firmly until the card is fully seated.

Make sure that the gold edge connector of the graphics card is securely inserted.

Step 2.
Replace the screw to fasten the card in place, and replace the computer cover.

After installation, remember to connect the power cable to your graphics card, or the system will not boot. Do not touch the card when it's operating to prevent system instability.

Step 3.
Plug the display cable into your card; then turn on the computer and monitor. To connect a flat panel display to your graphics card, use the DVI-I connector. To connect an HDMI monitor to your graphics card, use the HDMI connector. To connect a DisplayPort monitor to your graphics card, use the DisplayPort connector.

You are now ready to proceed with the installation of the graphics card driver. Please refer to next chapter for detailed instructions.
How to enable the ATI CrossFireX™ technology?

Step 1:
Install two CrossFireX graphics cards of the same chipset on a CrossFireX-supported motherboard and connect the graphics cards via two CrossFire bridge interconnect cables (Figure 1). Then users can enable the CrossFireX technology through the graphics card driver.

Step 2:
After installing graphics card driver in operating system, when an ATI CrossFireX configuration is detected for the first time by the ATI Catalyst display driver, ATI CrossFireX support is automatically enabled, and the best possible GPU combination is selected based on the hardware configuration. If ATI CrossFireX is not enabled, access the ATI Catalyst Control Center (please refer to Page 14). From the ATI Catalyst Control Center, enter the CrossFire menu and assure to select the Enable CrossFireX™ check box (Figure 2).
3. Software Installation

Notice the following guidelines before installing the drivers:

1. First make sure your system has installed DirectX 9 or later version.
2. Make sure your system has installed the appropriate motherboard drivers (for the motherboard drivers, please contact the motherboard manufacturer.)

3.1. Driver and Utility Installation

3.1.1. Driver Installation

After installing the operating system, insert the driver disk into your optical drive. The driver Autorun screen is automatically displayed which looks like that shown in the screen shot below. (If the driver Autorun screen does not appear automatically, go to My Computer, double-click the optical drive and execute the setup.exe program.)

Step 1:
Click the Install Display Driver item.

Step 2:
Select the displayed language and then click Next.

Step 3:
Click the Install button.

For software MPEG support in Windows XP, you must install DirectX first. Users who run Windows XP with Service Pack 2 or above do not need to install DirectX separately.
Step 4:
Click the **Express** or **Custom** icon and then click **Next**.

Step 5:
Click the **Accept** button.

Step 6:
Click the **Finish** button to restart the computer. Then the driver installation is completed.
GIGABYTE “OC Guru” Graphics Card Smart Tuner (Only for GV-R697OC2-2GD)
GIGABYTE “OC Guru” graphics card smart tuner is a utility which helps users adjust card performance and monitor hardware information. Three modes are provided for different user needs in OC Guru: OC, Gaming, and Green modes. All GIGABYTE Super Overclock series cards equip with OC Guru for extreme performance boost.

OC Mode:
Under option "Manual", users have five profiles to save preferred GPU/Memory voltage, GPU/Memory clock, and fan speed settings. Under option "Auto", all settings will follow stock settings. Users can set hot key for each profile.

(Note1) Shader clock is not fixed for all AMD series models.
(Note2) Adjustable voltage value will vary with different models.

Incorrectly doing overclock/overvoltage may result in damage to your system and reduce the life of the system components.
**Gaming Mode:**
Extreme 3D gaming mode for enthusiastic users. Users can set preferred GPU/Memory clock and adjust screen brightness, contract value, and Gamma value under Gaming mode. Through GIGABYTE software On-Screen-Display (OSD), users can monitor hardware information in games and adjust display settings in real time. In addition, Gaming mode provides users with screenshots by hot-key.

Drag the bar left/right to decrease/increase display brightness, contract, and Gamma value

Stock GPU/Memory clock setting

Press "Apply" to apply preferred GPU/Memory clock

Drag the bar left/right to decrease/increase GPU/Memory clock

In game real-time On-Screen-Display hot-key setting

Screenshot output directory

Screenshot hot-key setting

Stock display setting

Press "Apply" to apply preferred display settings
**Green Mode:**
The best 2D and 3D power saving setting to avoid unnecessary power consumption. Under Green mode, users can choose PWM working frequency to lower power consumption and monitor current GPU power consumption. In addition, Green mode provides information of power saved through this mode.

![Software Installation](image)

- **Current GPU power consumption**
- **Power saving mode of PWM working frequency**
- **Standard PWM working frequency**

**Meter/Total mode switch:**
- **Meter mode:** power saved in a given period of time
- **Total mode:** power saved since OC GURU first activated

**Reset Meter mode from start**
**Hardware Monitor:**
Through GIGABYTE hardware monitor, users can easily monitor GPU/Memory clock, GPU temperature, GPU voltage, GPU current, Fan speed, and GPU usage. Moreover, users can easily record hardware information and export the data.
3.2. Taskbar Icon

After installation of the display driver, you will find an ATI icon in the notification area. Right-click the icon to enter the ATI Catalyst Control Center. The ATI Catalyst Control Center is used to configure all your graphics card settings.

Right-click the ATI icon to enter the ATI Catalyst Control Center.

Or you can right-click on the desktop and select Catalyst(TM) Control Center.
Configuring Audio Output
Configure the default audio output device based upon your needs.

Step 1:
Go to Start > Control Panel > Hardware and Sound > Manage audio devices.

Using the picture to the left as the example, to set HDMI audio to be the default Sound Playback device, select Digital Output Device (HDMI). Otherwise, select Digital Output Device (SPDIF), which is the onboard audio controller.

Step 2:
In the Manage audio devices dialog box, click the Playback tab.

Using the picture to the left as the example, to set HDMI audio to be the default Sound Playback device, select Digital Output Device (HDMI). Otherwise, select Digital Output Device (SPDIF), which is the onboard audio controller.
3.3. Display Properties Pages

Display Settings (Resolutions and Color Quality for Windows)
To access Display Settings page, right-click on desktop and select Personalize, then the Personalization windows will show up. Select Display Settings to adjust the screen resolution and color quality settings.

![Display Settings](image)

You can move the slider to change the resolution.

You can click the item to change the color quality.

Click the Advanced button for advanced settings.

<table>
<thead>
<tr>
<th>Display Matrix</th>
<th>Model</th>
<th>GV-R697OC2-2GD</th>
<th>GV-R697OC-2GD</th>
<th>GV-R695OC-1GD</th>
<th>GV-R695UD-1GD</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVI+DP</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>HDMI+DVI</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>HDMI+DP</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CRT(Note)+HDMI</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CRT(Note)+DVI+DP</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>DVI+DVI+DP</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>HDMI+DVI+DP</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CRT(Note)+HDMI+DVI</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</tr>
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<td>CRT(Note)+DVI+DP</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

(Note) By a DVI-to-D-Sub adapter.
ATI Catalyst® Control Center Basic View:
The Basic View is the default view when ATI Catalyst Control Center is launched for the first time. This interface provides access to the basic settings and advanced features of your ATI graphics products. You can switch between Basic View and Advanced View at any time.

To access more settings in Basic View, click Basic, and then click Next.

Easy Setup Wizards:
Choose a wizard from the central list and click Go for step-by-step assistance.

- **Avivo Video Converter**
  This wizard assists you to convert videos from one file format to another.

Step 1:
Select **Avivo Video Converter**, then click **Go**.

Step 2:
Select the video file to be converted.

Step 3:
In the **Output Folder** area, select the destination folder where the new file will be located. Click **Next**.
Step 4:
In the Output Video Format list, select a file format for the new file. If you wish to change the name of the new file, enter the new name in the Output File area. Finally, click Next to start file conversion.

- Setup my display configuration
  This wizard allows you to configure display setting for desktop viewing.

- HydraVision Configuration Settings
  This wizard will take you to set up the HydraVision Configuration based on your own preference.
Quick Settings:
The Quick Settings page provides access to three main settings.

■ 3D Quality
3D Performance and Quality Settings allows your 3D games and applications to get faster performance and better quality with a more balanced setting.

■ Video Playback
Use this option to optimize video playback in different room environment or to select how video playback appears on the second display.

■ Display Setup
This option allows you to configure your desktop, including changing desktop resolution and desktop mode, setting up extended desktop (requires more than one display), and rotating desktop image to match new display orientation.

Information Center:
The Information Center page in Basic and Advanced View provides hardware and software information about the installed graphics card.

■ Graphics Software
Provides software information including driver version, CATALYST version, Direct 3D version and so on.

■ Graphics Hardware
Provides hardware information including graphics chipset, BIOS version, memory size, core clock and so on.
ATI Catalyst Control Center Advanced View
The Advanced page allows you to configure all of the many available settings of your ATI graphics card.

View Properties:
The CATALYST Control Center dashboard supports three types of views: Basic View/ Advanced View/ Custom View.

- **Basic View**
The Basic view is the default view when CATALYST Control Center is launched for the first time. Refer to the previous pages for details.

- **Advanced View**
The Advanced view provides access to the advanced features on each page. The left navigation pane displays a tree view that lists all the advanced features. The Advanced view is recommended for experienced users.

- **Custom View**
The Custom view allows you to display only the features you choose in the left navigation pane. The Custom view is recommended for experienced users who want to expose only the features they adjust most often or that their 3D application supports.

Hotkeys Properties:
The Hotkeys Manager allows you to create shortcut key combinations to quickly perform tasks such as changing a graphics setting or opening an application. A Hotkey is a combination of a modifier key or keys, such as Ctrl, Alt, or Shift, and any letter from the alphabet.
Profiles Properties:
You can use profiles to create customized environments for your desktop, video, and 3D applications. Define and save your own personal video settings that can be quickly activated manually, through a Hotkey, or by file association.

Note:
A profile applies to a specific graphics card. If there is more than one graphics card installed in your computer, you need to select the appropriate card before creating, loading, or activating a Profile.

Preferences Properties:
The Preferences page helps to restore defaults, change skins, and update the Catalyst Control Center. The Catalyst Control Center Preferences page contains the following options:
- Always on Top
- Hide Tooltips
- Hide Toolbar Text
- Hide Splash Screen
- Enable System Tray Menu
- Select a Language ...
- Select a Skin ...
- Restore Factory Defaults ...
Help Properties:
The Catalyst Control Center Help feature allows you to access the comprehensive online help, register your product, or generate a problem report should you require technical support.

The Catalyst Control Center Help feature offers the following options:

- Help for this Page
- Help Contents ...
- Go to AMD.com
- About Catalyst Control Center ...

![Catalyst Control Center Help Feature](image)
Displays Manager:
Displays Manager is the central location for configuring your display devices and arranging your desktop. Use Displays Manager to change your display setup and arrange your desktop in a multi-monitor environment.

Note:
The stretch vertically and horizontally options are not supported on systems running Windows Vista.

Display Options:
The Display Options aspect gives you additional control to optimize performance of OpenGL and Direct 3D applications. Choose one of the Display Detection Option to prevent screen flicker when detecting a display.

Note:
On systems Windows XP, this page will show up the 3D Refresh Rate Override item. Use 3D Refresh Rate Override to set a refresh rate of your choice when a full-screen application or game has a default refresh rate that is lower than optimal.
Monitor Properties 1:

- **Attributes**
  Monitor Attributes provides information about the attached monitor. You can also enable Extended Display Identification Data (EDID). EDID uses the information provided by the attached monitor to determine the limits for the resolution and refresh rate.

- **Adjustments**
  Use Monitor Adjustments to resize and reposition the computer desktop on your monitor's display screen. You can also adjust the horizontal and vertical sync or enable composite sync.

- **Avivo™ Color**
  Use Avivo™ Color for AMD graphics cards that support per-display color settings. Independently set the hue, saturation, and temperature for each attached and enabled display.
3D:

- **Standard Settings**
  The Standard Settings page provides access to a universal slider control where you can simultaneously adjust all of the standard 3D settings for any type of 3D application. The slider enables you to adjust for overall system performance, overall 3D image quality, or a balance between the two. This page is useful when you are not aware of which type of 3D settings your application uses, or when you want to use an overall adjustment control that rapidly configures your application.

- **Anti-Aliasing**
  Anti-Aliasing (AA) is a rendering technique designed to remove jagged edges, shimmering, and pixelation problems that are common in rendered 3D images. Rather than determining the color to display for each pixel by sampling a single location at the pixel's center, anti-aliasing samples multiple locations within each pixel and blends the results together to produce the final color.
  Anti-Aliasing can be set to favor either system processing performance or image quality, or the application can decide:
  - Setting for performance is best used when the 3D image is animated and smooth motion is the most important consideration.
  - Setting for quality is best used when highly detailed and realistic 3D objects is the most important consideration.
  - If you are unsure of how to configure anti-aliasing, use the Use application settings option. Your display will automatically adjust to the application's requirements.

- **Adaptive Anti-Aliasing**
  Adaptive anti-aliasing is a technique that applies a combination of multi-sampling (MSAA) and super-sampling (SSAA) on 3D objects to improve edge smoothness and fine detail. This feature renders 3D objects containing transparencies more realistic, providing exceptional levels of image quality while maintaining performance.
Anisotropic Filtering

Anisotropic Filtering is a technique that preserves detail on surfaces that have three-dimensional perspective and fade away into the background. It works best when used in conjunction with Mipmapping. Anisotropic Filtering can be set to favor either an increase in system processing performance or improved image quality:

- Setting for performance is best used with applications that display objects with smooth, simple surfaces, like those seen in CAD applications.
- Setting for quality is best used with applications that display highly detailed scenes, backgrounds, and textured objects, like those seen in 3D games.
- If you are unsure how to configure anisotropic filtering, use the Use application settings option. Your display will automatically adjust to the application's requirements.

All Settings

The All Settings page combines all of the principal 3D features onto a single page, without any preview window, allowing for quick access and adjustment. This page is useful when it is not necessary to preview the adjusted settings because the effect is already known or understood.

Color:

Adjust the overall richness of color by using the Gamma control. To adjust the overall brightness use the Brightness control, and the overall contrast use the Contrast control.
Avivo™ Video:

- Presets
  To quickly adjust your video settings choose one of the video presets.
  Note:
  These settings will only affect applications with video overlay support.

- Basic Color
  Use the Avivo Color: Basic option to manually set Gamma, Brightness, Contrast, Saturation, and Tint for video playback.
  Note:
  Certain video formats do not support these adjustments. These settings will only affect applications with video overlay support.

- Advanced Color
  Use the Advanced Color page to fine tune the color of standard definition video (720x480) to make the color more or less vibrant and to remove excess red from skin tones. You can preview your changes before applying them.
  Note:
  This page is only for Windows Vista.
Basic Quality
You can control the deinterlacing settings by checking the **Use automatic deinterlacing** item. The bar determines how the two interlaced video fields are converted into a non-interlaced form.
Note:
These settings will only affect applications with video overlay support.

Theater Mode
Use Theater Mode to change the way you view streaming video.
Note:
- These settings will only affect applications with video overlay support. Extended Desktop Mode is not supported on systems running Windows Vista.
- This item will be available when you connect two monitors.

All Settings
The All Settings page combines all of the principal Video features onto a single page, without any preview window, allowing quick access and adjustment. This page is useful when it is not necessary to preview the adjusted settings because the effect is already known or understood.
Note:
These settings will only affect applications with video overlay support.
**ATI Overdrive:**

Use Overdrive to maximize your viewing experience by dynamically and safely overclocking the graphics processor and memory. Use the Automated clock configuration utility to obtain the ATI recommended speeds for the graphics processor clock and video memory clock. Alternatively, manually set these speeds to meet your specific requirements. Finally, Overdrive can be configured to run when the computer is booted or only when running 3D applications.

*Note:*
If your computer cannot restart after setting a higher clock speed, press and hold the <Shift> key during system start-up until you hear three beeps. Once your computer has full booted, disable Preserve ATI Overdrive settings at logon.

**CrossFireX™:**

CrossFireX delivers exceptional performance on a single display by combining the processing power of two or more Graphics Processing Units (GPUs).

- **Configure**
  
  When an ATI CrossFireX configuration is detected for the first time by the ATI Catalyst display driver, ATI CrossFireX support is automatically enabled. If ATI CrossFireX is not enabled, select the **Enable CrossFireX™** check box.

- **Diagnostics**
  
  Use this page to determine whether your ATI CrossFireX configurations are configured properly and functioning optimally. You can also use the page to view performance issues and suggested solutions specific to a particular configuration.

*Note:*
This page is only for ATI CrossFireX configuration.
4. Troubleshooting Tips

The following troubleshooting tips may help if you experience problems. Contact your dealer or GIGABYTE for more advanced troubleshooting information.

- Check that the card is seated properly in the PCI Express x16 slot.
- Ensure that the display cable is securely fastened to the card's display connector.
- Make sure that the monitor and computer are plugged in and receiving power.
- If necessary, disable any built-in graphics capabilities on your motherboard. For more information, consult your computer's manual or manufacturer.
  (NOTE: Some manufacturers do not allow the built-in graphics to be disabled or to become the secondary display.)
- Make sure you selected the appropriate display device and graphics card when you install the graphics driver.
- For more troubleshooting information, please right-click the ATI icon in the notification area.
- Restart your computer.
  Press <F8> on your keyboard after system starts up. When the Windows Advanced Options Menu appears, select Safe Mode and press <Enter>.
  After getting into Safe Mode, in Device Manager check whether the driver for the graphics card is correct.
- For more assistance, use the Troubleshooting Guide located in the Windows Help or contact your computer manufacturer.
- If you are not able to find the desired monitor color/resolution settings:
  The color and screen resolution options available for selection depend on the graphics card being installed.

NOTE: If necessary, adjust your monitor’s setting using monitor’s adjust panel to make the screen look focused, crisp, and sharp. (Please refer to the monitor's manual.)
5. Appendix

5.1. Resolutions and Color Depth Tables

<table>
<thead>
<tr>
<th>Display Screen Resolution</th>
<th>Refresh Rate (Hz)</th>
<th>Color Depth (bpp)</th>
<th>Color Depth (bpp)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>8bpp(256 color)</td>
<td>16bpp(65K color)</td>
</tr>
<tr>
<td>640 x 480</td>
<td>200</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>800 x 600</td>
<td>200</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1024 x 768</td>
<td>200</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1152 x 864</td>
<td>100</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1280 x 768</td>
<td>85</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1280 x 960</td>
<td>160</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1280 x 1024</td>
<td>120</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1440 x 900</td>
<td>60</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1600 x 1200</td>
<td>100</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1680 x 1050</td>
<td>100</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1792 x 1344</td>
<td>85</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1800 x 1440</td>
<td>70</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1856 x 1392</td>
<td>75</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1920 x 1080</td>
<td>75</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1920 x 1200</td>
<td>85</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>1920 x 1400</td>
<td>75</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2048 x 1536</td>
<td>66</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

* The tables are for reference only. The actual resolutions supported depend on the monitor you use.
5.2. Regulatory Statements

Regulatory Notices
This document must not be copied without our written permission, and the contents there of must not be imparted to a third party nor be used for any unauthorized purpose. Contravention will be prosecuted. We believe that the information contained herein was accurate in all respects at the time of printing. GIGABYTE cannot, however, assume any responsibility for errors or omissions in this text. Also note that the information in this document is subject to change without notice and should not be construed as a commitment by GIGABYTE.

Our Commitment to Preserving the Environment
In addition to high-efficiency performance, all GIGABYTE motherboards fulfill European Union regulations for RoHS (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) and WEEE (Waste Electrical and Electronic Equipment) environmental directives, as well as most major worldwide safety requirements. To prevent releases of harmful substances into the environment and to maximize the use of our natural resources, GIGABYTE provides the following information on how you can responsibly recycle or reuse most of the materials in your "end of life" product.

Restriction of Hazardous Substances (RoHS) Directive Statement
GIGABYTE products have not intended to add and safe from hazardous substances (Cd, Pb, Hg, Cr+6, PBDE and PBB). The parts and components have been carefully selected to meet RoHS requirement. Moreover, we at GIGABYTE are continuing our efforts to develop products that do not use internationally banned toxic chemicals.

Waste Electrical & Electronic Equipment (WEEE) Directive Statement
GIGABYTE will fulfill the national laws as interpreted from the 2002/96/EC WEEE (Waste Electrical and Electronic Equipment) directive. The WEEE Directive specifies the treatment, collection, recycling and disposal of electric and electronic devices and their components. Under the Directive, used equipment must be marked, collected separately, and disposed of properly.

WEEE Symbol Statement
The symbol shown below is on the product or on its packaging, which indicates that this product must not be disposed of with other waste. Instead, the device should be taken to the waste collection centers for activation of the treatment, collection, recycling and disposal procedure. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local government office, your household waste disposal service or where you purchased the product for details of environmentally safe recycling.

- When your electrical or electronic equipment is no longer useful to you, "take it back" to your local or regional waste collection administration for recycling.
- If you need further assistance in recycling, reusing in your "end of life" product, you may contact us at the Customer Care number listed in your product's user's manual and we will be glad to help you with your effort.
Finally, we suggest that you practice other environmentally friendly actions by understanding and using the energy-saving features of this product (where applicable), recycling the inner and outer packaging (including shipping containers) this product was delivered in, and by disposing of or recycling used batteries properly. With your help, we can reduce the amount of natural resources needed to produce electrical and electronic equipment, minimize the use of landfills for the disposal of "end of life" products, and generally improve our quality of life by ensuring that potentially hazardous substances are not released into the environment and are disposed of properly.

China Restriction of Hazardous Substances Table

The following table is supplied in compliance with China’s Restriction of Hazardous Substances (China RoHS) requirements:

<table>
<thead>
<tr>
<th>部件名称 (Parts)</th>
<th>需有害物质或元素 (Hazardous Substances)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>铅 (Pb)</td>
</tr>
<tr>
<td>PCB板</td>
<td>○</td>
</tr>
<tr>
<td>结构件及风扇</td>
<td>×</td>
</tr>
<tr>
<td>Mechanical parts and Fan</td>
<td></td>
</tr>
<tr>
<td>芯片及其他主动零件</td>
<td>×</td>
</tr>
<tr>
<td>Chip and other Active components</td>
<td></td>
</tr>
<tr>
<td>连接器</td>
<td>×</td>
</tr>
<tr>
<td>Connectors</td>
<td></td>
</tr>
<tr>
<td>被动电子元器件</td>
<td>×</td>
</tr>
<tr>
<td>Passive Components</td>
<td></td>
</tr>
<tr>
<td>线材</td>
<td>○</td>
</tr>
<tr>
<td>Cables</td>
<td></td>
</tr>
<tr>
<td>焊接金属</td>
<td>○</td>
</tr>
<tr>
<td>Soldering metal</td>
<td></td>
</tr>
<tr>
<td>助焊剂、散热器、标签及其他耗材</td>
<td>○</td>
</tr>
</tbody>
</table>

○: 表示该有害物质在该部件所有均质材料中的含量均在SJ/T 11363-2006标准规定的限量要求以下，
Indicates that this hazardous substance contained in all homogenous materials of this part is below the limit requirement SJ/T 11363-2006

×: 表示该有害物质至少在该部件的某一均质材料中的含量超过SJ/T 11363-2006标准规定的限量要求。
Indicates that this hazardous substance contained in at least one of the homogenous materials of this part is above the limit requirement in SJ/T 11363-2006

China Restriction of Hazardous Substances Table

The following table is supplied in compliance with China’s Restriction of Hazardous Substances (China RoHS) requirements: