



GEFORCE®
GTX 1070
USER GUIDE



nVIDIA.

TABLE OF CONTENTS

TABLE OF CONTENTS	ii
01 INTRODUCTION	3
About This Guide	3
Minimum System Requirements	4
02 UNPACKING	5
Equipment	6
03 Hardware Installation	7
Safety Instructions	7
Before You Begin	8
Installing the GeForce Graphics Card	8
04 SOFTWARE INSTALLATION	12
GeForce Experience Software Installation	12
05 CONFIGURING SLI	14
Accessing the NVIDIA Control Panel	14
Enabling / Disabling SLI	15
06 CONFIGURING HDMI	16
Enabling Audio Over HDMI	16
07 FEATURES	17
08 Compliances	19
UNITED STATES Federal Communications Commission (FCC)	20
Canada Industry Canada (IC)	21
EUROPEAN UNION European Conformity; Conformité Européenne (CE)	21
AUSTRALIA & NEW ZEALAND Australian Communications and Media Authority (C-tick)	21
JAPAN Voluntary Control Council for Interference (VCCI)	22
KOREA Radio Research Agency (RRA)	22
TAIWAN COMPLIANCE Bureau of Standards, Metrology and Inspection (BSMI)	23
SAFETY Underwriters Laboratories (UL)	23

01

INTRODUCTION

Thank you for choosing the NVIDIA® GeForce® GTX 1070 Founders Edition graphics card.

The GeForce GTX 1070 is a powerful graphics card that gives you the fast, smooth, quiet gaming you're looking for in all your favorite titles. With features like NVIDIA GPU Boost™ 3.0, NVIDIA TXAA™, and NVIDIA PhysX™, this graphics card will give you the best your games have to offer.

Plus, with NVIDIA's GeForce Experience built right into its drivers, you can take advantage of NVIDIA's tens of thousands of hours of testing to optimize your gameplay settings with one click.

About This Guide

This installation guide discusses the installation and operation of the NVIDIA GeForce GTX 1070 graphic card.



Note: It is important to register your product in order to receive online and phone support. Consult <http://www.nvidia.com/register> for more information on registering your product.

Minimum System Requirements

> **Motherboard**

PCI Express® or PCI Express 3.0-compliant motherboard with one dual-width x16 graphics slot.

> **System Power Supply**

Minimum 500 W or greater system power supply with one 8-pin PCI Express supplementary power connectors.

> **Operating System**

- Microsoft Windows 10, 32-bit or 64-bit
- Microsoft Windows 8.1, 32-bit or 64-bit
- Microsoft Windows 7, 32-bit or 64-bit
- Linux, 32-bit or 64-bit
- FreeBSD x86

> **System Memory**

8 GB system memory (16 GB recommended)

> **Internet connection for driver installation**

> **350 MB of available hard disk space**

02

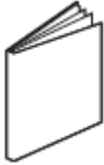
UNPACKING

Prior to unpacking your new NVIDIA® GeForce® GTX 1070 graphics card, it is important to make sure you meet all the system requirements listed on page 2 for a smooth installation.

Be sure to inspect each piece of equipment shipped in the packing box. If anything is missing or damaged, contact your reseller.

Equipment

The following equipment and documentation are included in the NVIDIA® GeForce® GTX 1070 graphics card box.

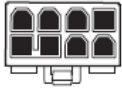


Quick Start Guide



Support Guide

One 8-pin
power
connector

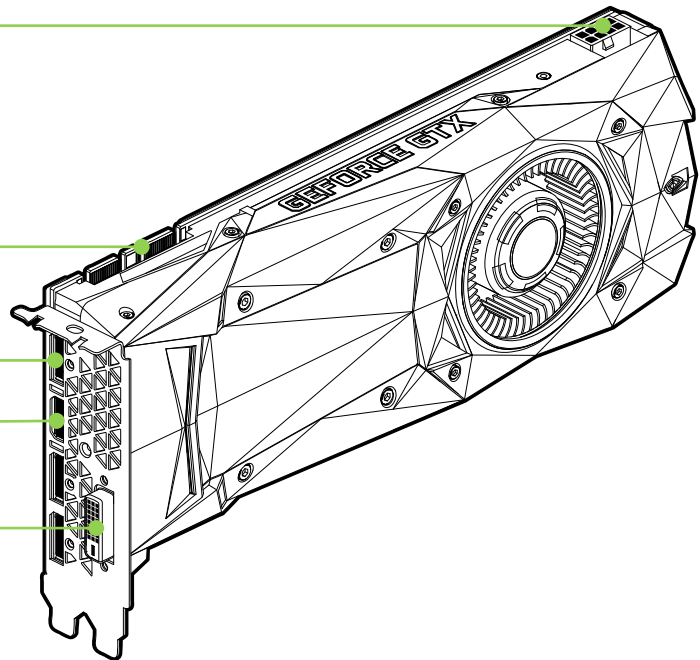


SLI connector

DisplayPort connectors
(Qty 3)

HDMI
connector

DVI
connector



NVIDIA GeForce GTX 1070 Graphics Card

03

HARDWARE INSTALLATION

Installing the NVIDIA® GeForce® GTX 1070 graphics card hardware involves opening up your computer. Follow all of the safety instructions provided here to ensure that there is no damage to you, your computer, or the graphics board.

Safety Instructions

To reduce the risk of fire, electric shock, or injury, always follow basic safety precautions.



Note: All hardware must be installed prior to installation of the drivers.

- > Remove power from your computer by disconnecting the AC main source before installation.
- > Do not operate this product near water or when your hands or body are wet.
- > Do not place this product on soft surfaces that could block the ventilation slots and cause overheating.
- > Do not place this product near a heating register or radiator.
- > Place this product securely on a stable surface. Serious damage to this product may result if it falls.
- > Do not allow anything to rest on the power cord. Do not place this product where a person can step or trip on the power cord.

Before You Begin

The NVIDIA® GeForce® GTX 1070 graphics card is a PCI Express 3.0 ×16 graphics card. Your computer may already have a graphics card installed in the PCI Express slot. If so, you will need to remove that graphics card and replace it with the GeForce GTX 1070 graphics card.

If you do not have a graphics card, this means that your motherboard has on-board graphics (there is a graphics chip installed on your motherboard or integrated in the motherboard chipset). If this is the case, there is no action that needs to be taken before installing your new graphics card.

Installing the GeForce Graphics Card

Because there are so many different computer systems on the market, the procedure to install the GeForce GTX 1070 graphics card can vary from system to system. Use the following instructions as a guideline and consult the documentation for your computer system for any further information on your individual system.



Note: It is important that all power to the computer be disconnected before you install the graphics card.

Discharge your body's static electricity by touching a grounded surface before touching the graphics card. A grounded surface is the computer chassis, or some other surface you know to be grounded.

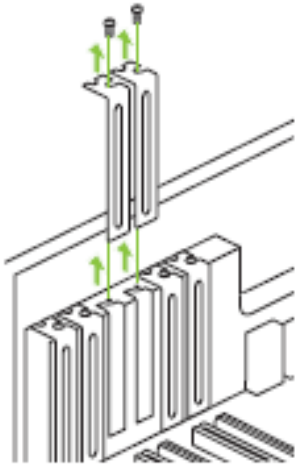
Use the following procedure to install the GeForce GTX 1070 graphics card into your computer system.

- 1 Turn off your computer and monitor and disconnect the power cord.
Depending on your computer system, you may need to disconnect the cable going to the back of your system. Mark the cables so you can make sure you reconnect them properly.
- 2 Open your computer by removing the cover/side panel. Refer to your computer documentation from the original manufacturer for assistance.
- 3 Remove any existing graphics card (if there is one). Save hardware (such as screws and brackets) to use when installing the NVIDIA graphics card.



ATTENTION: If your system has been running for a period of time prior to opening the panels, it is very important that you wait until the graphics card in your system has cooled before taking the card out of the system. Graphics cards get very hot when they have been operating for any length of time.

- 4 Remove two adjacent slot covers if you do not have a graphics card installed.

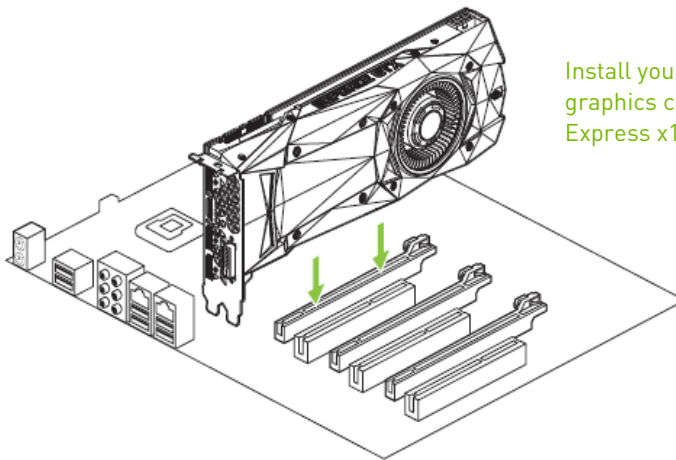


Remove two adjacent slot covers that corresponds to the PCI-Express slot you are installing the GeForce GTX graphics card in.



Note: The NVIDIA® GeForce® GTX 1070 card is double-wide and will require removing two slot covers.

- 5 Plug the GeForce GTX 1070 graphics card into the Primary PCI Express x16 slot on your motherboard. This is often the slot closest to the CPU but may be the second or third slot. Look for the slot labeled x16. It will likely be the only PCI Express slot with a retention lever on the end of the slot or the one closest to the CPU



Install your first GeForce GTX 1070 graphics card into the Primary PCI Express x16 slot.



Note: It is recommended that you install the graphics card into the primary PCI Express x16 slot. If you install the graphics card into the secondary slot, your system may not recognize the graphics card and there will be nothing displayed on the monitor.

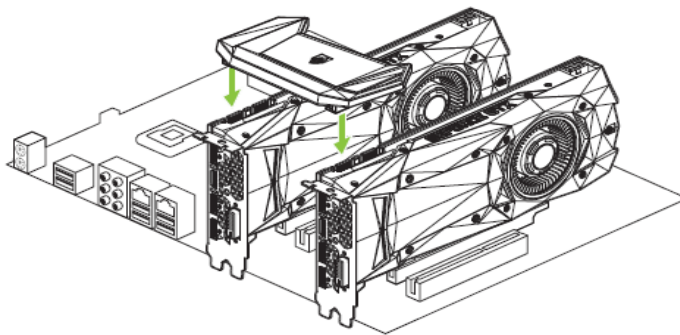
Also note that on some motherboard SBIOS, the physical location of the primary slot can be configured when there are more than one PCI Express x16 slots.

If you are installing an additional NVIDIA® GeForce® GTX 1070 graphics cards for a 2-way NVIDIA SLI® configuration, continue with step 6. If you are only installing one GeForce card, go on to step 8.



Note: All of the graphics cards in an SLI configuration must be identical. Therefore, both cards in a 2-way SLI configuration must be GeForce GTX 1070 graphics cards.

- 6 Install a second GeForce GTX 1070 graphic card (2-way SLI):
Install the second GeForce card into the outer most PCI Express x16 slot on the motherboard.
Remove the associated slot covers for the second GeForce GTX 1070 graphic card as shown in step 4.
- 7 Connect the two GeForce GTX 1070 cards together using the dual SLI bridge connector that came with your SLI-ready motherboard.



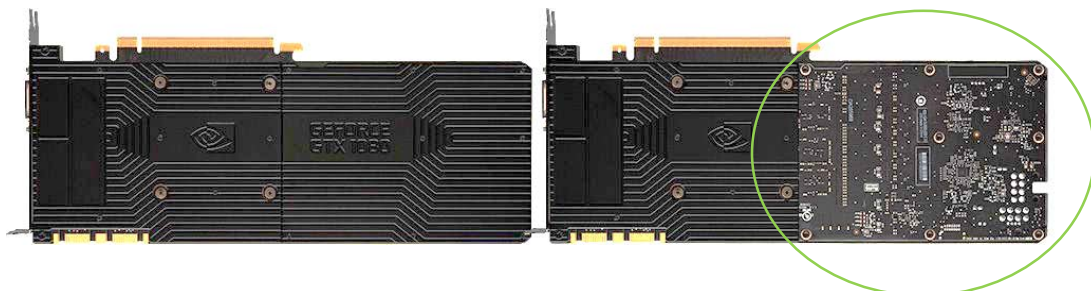
2-way SLI configuration: Install your second GeForce GTX 1070 graphics card into the outer PCI Express x16 slot (the outer slot is the one farthest away from the CPU).

Connect the two cards together using the dual SLI bridge connector that came with your SLI-ready motherboard.

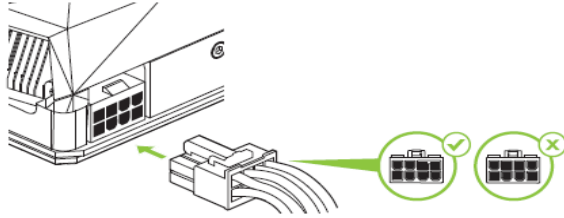


Note: For 4K and surround gaming performance, use the NVIDIA SLI High Bandwidth Bridge available from <http://www.geforce.com/hardware/technology/sli> and select **NVIDIA SLI Bridge**. There are three sizes available depending on which slot you choose to put the second card.

The GeForce GTX 1070 has a new industrial design with a faceted body and a new low profile backplate. The backplate features a removable section to allow better airflow between multiple graphics cards in an adjacent SLI configuration.

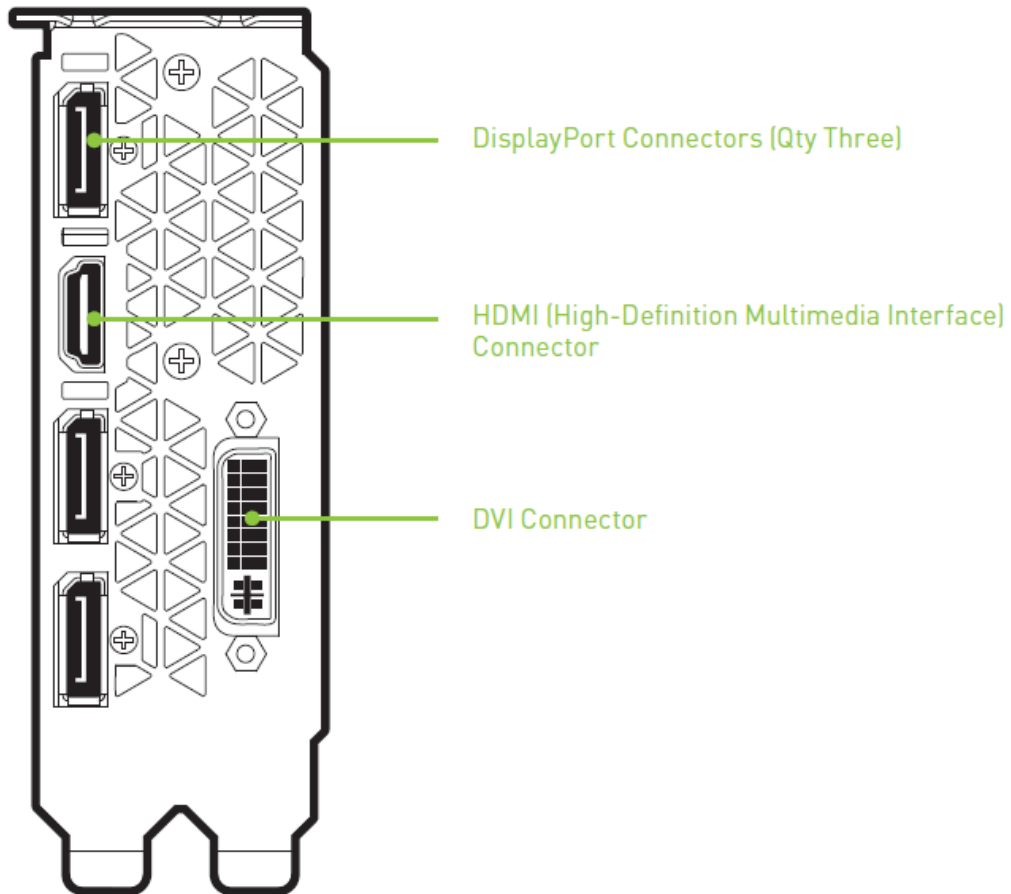


- 8 Connect the 8-pin power connector from the power supply to the power connector on the top edge of the NVIDIA® GeForce® GTX 1070 graphics card. Note that the connector and socket on the graphics card have a unique shape and connect one way only.



GeForce GTX 1070 graphics card requires one 8-pin PCI Express power plugs from the system power supply.

- 9 Reinstall the cover on your computer and reconnect any cables that you removed earlier in the installation.



04

SOFTWARE INSTALLATION

With the hardware installed, it is now time to install the NVIDIA® GeForce® Experience software and the graphics driver.

GeForce Experience Software Installation

- 1 Download and install GeForce Experience software.
 - Go to <http://www.geforce.com/geforce-experience/download> and click **Download Now**.
 - Accept the NVIDIA software license agreement by selecting **Agree and Continue**. GeForce Experience software begins to install.
 - Select **Close** to finish the installation.
- 2 Optimize your installed games.
 - Open GeForce Experience and click **Scan for Games** and click **OK** to scan your installed games.
 - Click on **Optimize All** to optimize your game settings.

3 Install the latest drivers.

- Open NVIDIA® GeForce® Experience and select the Drivers tab.
- Select Download Driver. Your GPU driver begins to download.
- Select Express Installation when the download finishes. GeForce Experience begins to install the graphics driver.



Note: It may take several minutes for the installation to take place. Your screen may go blank for a few seconds one or more times during installation. This is normal.

- Click CLOSE when the driver install completes.

Congratulations!

Your GeForce GTX 1070 graphics card is now ready to use!



Note: If you have any questions about your NVIDIA product you can Chat live with NVIDIA Customer Care at www.nvidia.com/support or call 1-800-797-6530.

05

CONFIGURING SLI

NVIDIA SLI is a revolutionary technology developed by NVIDIA that allows you to connect identical NVIDIA® GeForce® graphics cards together to deliver increased performance.

You can enable SLI by either clicking on the SLI-capable system balloon in the system tray or by going to the NVIDIA Control Panel.



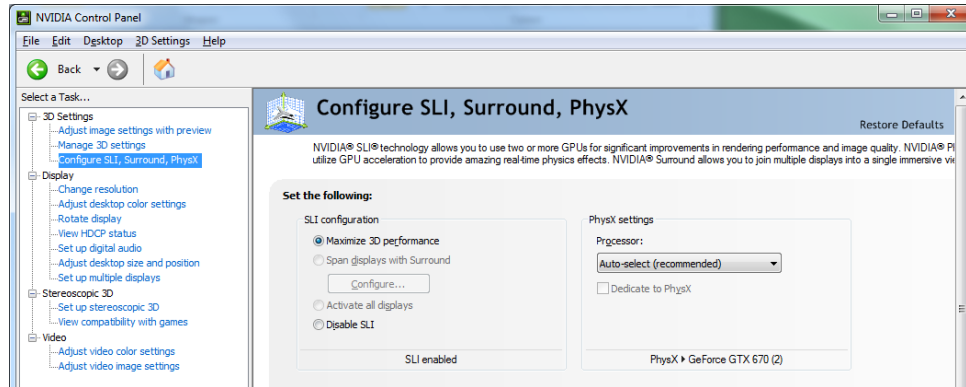
Note: You must have an SLI-ready motherboard and two identical SLI-ready GeForce GTX 1070 graphics cards installed in your PC in order to enable SLI.

Accessing the NVIDIA Control Panel

To access the NVIDIA Control Panel, you can right-click the Windows desktop and select **NVIDIA Control Panel** from the menu. Other ways to access the NVIDIA Control Panel depends on the operating system.

Enabling / Disabling SLI

- 1 Once you have the NVIDIA Control Panel open, click on **Configure SLI, Surround, PhysX** in the left task pane.
- 2 Enable SLI by making sure the **Disable SLI** button is not checked.



06

CONFIGURING HDMI

Connecting HDTV via HDMI allows you to output both digital audio and video from your graphics card to an HDTV.

Enabling Audio Over HDMI

If you are connecting to your display over HDMI, you may need to set the HDMI output to be your default audio device.

- 1 Select Start → Control Panel → Sound.
- 2 On the Playback tab, select your HDMI display and select
- 3 Set Default.

Congratulations! Your NVIDIA GeForce graphics card is now ready to use!

For detailed instructions on using the NVIDIA Control Panel, consult the **Control Panel User's Guide** found at www.geforce.com/drivers (select your driver, then click on **Documentation** to download the User's Guide).

07

FEATURES

- > **NVIDIA® GeForce® Experience™:** Ensures the best gaming experience, the day a game releases, by automatically updating your game-ready drivers. Plus, it allows users to optimize the game settings to their PC with a single click. GeForce Experience also includes NVIDIA ShadowPlay™ that lets you capture and share your favorite gaming moments.
- > **Multi-Frame sampled Anti-Aliasing (MFAA):** MFAA delivers a 30% performance boost while maintaining smooth, high-quality edges by alternating sample calculations across each frame and each pixel.
- > **Dynamic Super Resolution (DSR):** This innovative feature can deliver 4K fidelity to 1070p displays for exceptional detail and image quality.
- > **Voxel Global Illumination (VXGI):** Part of the NVIDIA GameWorks™ library for developers, VXGI accelerates dynamic lighting effects for a truly immersive, cinematic experience.
- > **NVIDIA GameStream™¹:** GeForce GPU support for NVIDIA PhysX technology, enabling a totally new class of physical gaming interaction for a more dynamic and realistic experience with GeForce.
- > **NVIDIA Ansel:** Ansel is a powerful, easy-to-use game capture tool built in cooperation with leading game developers. Ansel lets you freeze time. You can compose your shots from any angle and adjust the image with post-process filters. You can capture at unbelievable resolutions, grab EXR images for full-spectrum color capture, and share your screenshots in 360° panoramas using your smartphone, PC, or VR headset

¹ NVIDIA GameStream requires an NVIDIA GameStream-ready device

- > **NVIDIA G-SYNC™-Ready²:** NVIDIA G-SYNC monitors feature revolutionary NVIDIA technology that eliminates screen tearing while also reducing input lag. The result is a smoothest, fastest, and most responsive gaming monitor experience ever seen.
- > **DirectX 12 Support:** Support for the latest Microsoft DirectX API to enable next-generation gaming.
- > **NVIDIA GPU Boost™ 3.0:** Dynamically maximizes clock speeds based on workload and allows enthusiast-class controls such as temperature target and fan controls, extra over-voltage headroom, and optimizations for water-cooling solutions. This allows gamers to push performance to new levels.
- > **NVIDIA Adaptive Vertical Sync:** Dynamically enable vertical sync based on your current frame rates for the smoothest gaming experience.
- > **NVIDIA CUDA™:** Unlock the power of the GPU's processor cores to accelerate demanding tasks such as video transcoding, physics simulation, ray tracing, and more, delivering incredible performance improvements over traditional CPUs.
- > **DisplayPort 1.2 Certified, DisplayPort 1.3/1.4 Ready:** Drive the latest DisplayPort panels with support for resolutions up to 4096x2160.
- > **HDMI³:** Support for HDMI includes 4K resolution at 60 Hz, GPU-accelerated Blu-ray 3D support, x.v.Color, HDMI Deep Color, and 7.1 digital surround sound.
- > **Dual-link DVI:** Drive flat-panel displays up to 2560x1600 resolution over a DVI connector.
- > **PCI Express 3.0:** This card is designed for the new PCI Express 3.0 bus architecture, offering the highest data transfer speeds for the most bandwidth-hungry games and 3D applications. It also maintains backwards compatibility with existing PCI Express motherboards for the broadest support.

² NVIDIA G-SYNC requires an NVIDIA G-SYNC-ready monitor

³ Blu-ray 3D playback requires the purchase of a compatible software player from CyberLink, ArcSoft, Corel, or Sonic. Upgrade your GPU to full 3D capability with NVIDIA 3DTV Play software, enabling 3D gaming, picture viewing and 3D web video streaming. See www.nvidia.com/3dtv for more details.

08 COMPLIANCES

The NVIDIA GeForce GTX 1070 graphics card is compliant with the following regulations:

- > Federal Communications Commission (FCC)
- > Industry Canada (IC)
- > Conformité Européenne (CE)
- > Australian Communications and Media Authority (RCM)
- > Voluntary Control Council for Interference (VCCI)
- > Bureau of Standards Metrology and Inspection (BSMI)
- > Korean Certification (KC)
- > Underwriters Laboratories (UL, cUL)
- > ISO 9241-307 Visual Display Ergonomics

UNITED STATES

Federal Communications Commission (FCC)



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- > Reorient or relocate the receiving antenna.
- > Increase the separation between the equipment and receiver.
- > Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- > Consult the dealer or an experienced radio/TV technician for help.

Canada

Industry Canada (IC)

CAN ICES 39B0/NMB-39B0

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

EUROPEAN UNION

European Conformity; Conformité Européenne (CE)



This device complies with the following CE Directives:

- > 2004/30/EU: EMC (Electromagnetic Compatibility) Directive
- > 2011/65/EU: RoHS (Restriction of the use of certain hazardous substances in electrical and electronic equipment) Directive

AUSTRALIA & NEW ZEALAND

Australian Communications and Media Authority (RCM)



This product meets the applicable EMC requirements for Class B, I.T.E equipment and applicable radio equipment requirements.

JAPAN**Voluntary Control Council for Interference (VCCI)**

この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。

VCCI-B

This is a Class B product based on the standard of the VCCI Council.

If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

KOREA**KC (Korea Certification)**

KCC-REM-NVA-PG411

B급 기기(가정용 방송통신기기)

이 기기는 가정용(B급)으로 전자파적합등록을 한 기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

Class B Equipment (For Home Use Broadcasting & Communication Equipment)

This equipment is home use (Class B) electromagnetic wave suitability equipment and to be used mainly at home and it can be used in all areas.

TAIWAN COMPLIANCE

Bureau of Standards, Metrology and Inspection (BSMI)



D33088

This device complies with CNS 13438 (2006) Class B

SAFETY

Underwriters Laboratories (UL)



I.T.E. ACCESSORY
E204896

Notice

The information provided in this specification is believed to be accurate and reliable as of the date provided. However, NVIDIA Corporation ("NVIDIA") does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information. NVIDIA shall have no liability for the consequences or use of such information or for any infringement of patents or other rights of third parties that may result from its use. This publication supersedes and replaces all other specifications for the product that may have been previously supplied.

NVIDIA reserves the right to make corrections, modifications, enhancements, improvements, and other changes to this specification, at any time and/or to discontinue any product or service without notice. Customer should obtain the latest relevant specification before placing orders and should verify that such information is current and complete.

NVIDIA products are sold subject to the NVIDIA standard terms and conditions of sale supplied at the time of order acknowledgement, unless otherwise agreed in an individual sales agreement signed by authorized representatives of NVIDIA and customer. NVIDIA hereby expressly objects to applying any customer general terms and conditions with regard to the purchase of the NVIDIA product referenced in this specification.

NVIDIA products are not designed, authorized or warranted to be suitable for use in medical, military, aircraft, space or life support equipment, nor in applications where failure or malfunction of the NVIDIA product can reasonably be expected to result in personal injury, death or property or environmental damage. NVIDIA accepts no liability for inclusion and/or use of NVIDIA products in such equipment or applications and therefore such inclusion and/or use is at customer's own risk.

NVIDIA makes no representation or warranty that products based on these specifications will be suitable for any specified use without further testing or modification. Testing of all parameters of each product is not necessarily performed by NVIDIA. It is customer's sole responsibility to ensure the product is suitable and fit for the application planned by customer and to do the necessary testing for the application in order to avoid a default of the application or the product. Weaknesses in customer's product designs may affect the quality and reliability of the NVIDIA product and may result in additional or different conditions and/or requirements beyond those contained in this specification. NVIDIA does not accept any liability related to any default, damage, costs or problem which may be based on or attributable to: (i) the use of the NVIDIA product in any manner that is contrary to this specification, or (ii) customer product designs.

No license, either expressed or implied, is granted under any NVIDIA patent right, copyright, or other NVIDIA intellectual property right under this specification. Information published by NVIDIA regarding third-party products or services does not constitute a license from NVIDIA to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property rights of the third party, or a license from NVIDIA under the patents or other intellectual property rights of NVIDIA. Reproduction of information in this specification is permissible only if reproduction is approved by NVIDIA in writing, is reproduced without alteration, and is accompanied by all associated conditions, limitations, and notices.

ALL NVIDIA DESIGN SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, DIAGNOSTICS, LISTS, AND OTHER DOCUMENTS (TOGETHER AND SEPARATELY, "MATERIALS") ARE BEING PROVIDED "AS IS." NVIDIA MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY, OR OTHERWISE WITH RESPECT TO THE MATERIALS, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. Notwithstanding any damages that customer might incur for any reason whatsoever, NVIDIA's aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the NVIDIA terms and conditions of sale for the product.

VESA DisplayPort

DisplayPort and DisplayPort Compliance Logo, DisplayPort Compliance Logo for Dual-mode Sources, and DisplayPort Compliance Logo for Active Cables are trademarks owned by the Video Electronics Standards Association in the United States and other countries.

HDMI

HDMI, the HDMI logo, and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC.

OpenCL

OpenCL is a trademark of Apple Inc. used under license to the Khronos Group Inc.

Trademarks

NVIDIA, the NVIDIA logo, CUDA, GameWorks, GeForce, GeForce GTX, GeForce Experience, GigaThread, GPU-BOOST, G-Sync, Lumenex, PureVideo, PhysX, ShadowPlay, SLI, and TXAA are trademarks or registered trademarks of NVIDIA Corporation. Other company product names may be trademarks of the respective companies with which they are associated.

Copyright

© 2016 NVIDIA Corporation. All rights reserved.

