

# GAINWARD

Premium Brand of #1 NVIDIA Board Partner

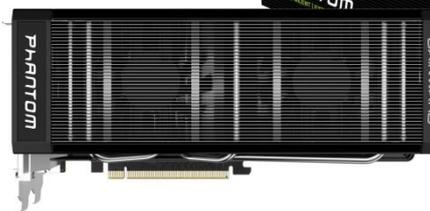
## Gainward GeForce GTX 680 Phantom << A Silent Monster >>

### Specifications

Process Technology	28nm	Base Clock	1084 MHz
Processor Cores	1536 cores	Boost Clock	1150 MHz
Memory Amount	2048MB	Memory Clock	3150 MHz
Memory Type	256b GDDR5	Memory Bandwidth	201.6 (GB/Sec)

### Key Features

- Kepler architecture
- NVIDIA GPU Boost
- NVIDIA Adaptive Vertical Sync
- Microsoft DirectX 11 with DirectCompute 5.0 support
- NVIDIA PhysX Technology
- NVIDIA CUDA technology
- NVIDIA 3D Vision Ready
- NVIDIA SLI Ready
- NVIDIA Surround
- PCI Express 3.0 support
- OpenGL 4.2 and OpenCL Support
- Support for four concurrent displays including:
  - DisplayPort 1.2
  - HDMI 1.4a
  - DVI \*2 (dual-link)



### Gainward Unique Features

#### ■ Phantom II cooler



Gainward GTX 680 Phantom, continue the elegant design of the first generation. The new Phantom II comes with brand new fins design (patent pending) that introduces

- 1) better thermal performance
- 2) lower acoustic level
- 3) more solid structure than previous generation.

#### ■ QuattroPorts



#### ■ Expertool II



### Output Support



DVI-I, DVI-D, HDMI, DisplayPort

### Dimension

PCB: 254mm(L)x112mm(W)  
Cooler :2.5 slot  
Bracket: 2 slot

### Accessory

1. Driver CD
2. Manual
3. Power cable
4. HDMI to DVI dongle
5. DVI to VGA dongle

### Minimum system requirements

Graphics card require:

- PCI Express-compliant motherboard with two and half width x16 graphics slot
- One 8-pin and One 6-pin PCI Express supplementary power connectors
- Minimum 550W or greater system power supply (with a minimum 12V current rating of 38A)
- Microsoft Windows 7, Windows Vista, Windows XP

GW GTX680\_Phantom\_bar code: 426018336-2517

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6-PHASE PWM



## ■ New Phantom II Cooler Design

Gainward GTX 680 Phantom, continue the elegant design of the first generation. The new Phantom II comes with brand new fins design (patent pending) that introduces

- 1) better thermal performance
- 2) lower acoustic level
- 3) more solid structure than previous generation.

With this new outstanding innovated thermal design and optimized product design Gainward GTX 680 Phantom delivers an extreme gaming performance for enthusiast gamers.

## ■ Extreme silent acoustics in 2D / idle mode

With the Phantom II cooler, Gainward GTX 680 Phantom gets 7.8dB quieter or 60% lower than reference board under 2D operation or idle mode.

## ■ Extreme cool & silent in 3D heavy loading under factory over-clocked speed

Thanks to the Phantom II cooler, Gainward GTX 680 Phantom with factory over-clocked speed performs **6° C** lower GPU temperature than reference board with reference clock as well as **11.5dB** lower acoustics level.

## ■ QuattroPorts



Four simultaneous displays on one single GeForce GTX 680 Phantom board.

- With 3D Vision Surround (3x 3D monitors) and an accessory display for email, chat, web browsing and more.

For three DVI monitors – NV Surround application, using the HDMI to DVI dongle for the GTX 680 Phantom card is the easiest way to enjoy the multi-monitor gaming environment.

## ■ Superior Hardware Design

With the experience of the Gainward's award winning high-performance/wide-bandwidth hardware design, GTX 680 Phantom, again, with re-designing the entire hardware, that brings –

- 1) lower energy loss
- 2) lower EMI level
- 3) higher stability under high current operation (heavy loading operation).

## ■ Factory over-clocked

Gainward GTX 680 Phantom works not only much higher clock speed than reference board - offers unbelievable performance but provides reliability and extra over-clocking capability.

## ■ 6-phase PWM

Gainward adds two extra phases for power supply for GPU core that helps to supply more fuel to the 3D graphics engine and share the current load with other four phases to reduce the max operating current. With those six phases work together, Gainward GTX 680 Phantom can be over-clocking easily and safely, the overall efficiency can be improved, the choke noise and EMI noise also be reduced.

## ■ DrMOS

To design GeForce GTX 680, Gainward uses DrMOS (for core power circuit) that was used for high end server CPU application. DrMOS is designed to handle high current with low noise operation and less heat generating.

Thanks to superior hardware design, Gainward's GTX 680 Phantom gains extra 5% more power efficiency that is 5W saving while performing 8% more in gaming performance.

## ■ Expertool II



Gainward proudly releases the Expertool II – the brand-new utility to tap into this powerful GTX 680 Phantom card.

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