

# amd phenom ii x4 955 black edition overclock

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## Unlocking the Power of the AMD Phenom II X4 955 Black Edition: A Complete Overclocking Guide

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For enthusiasts who crave more performance from their desktop, the AMD Phenom II X4 955 Black Edition remains a favorite choice. Despite its age, this quad core processor offers a solid foundation for gaming, content creation, and everyday productivity when pushed beyond its factory settings. In this in depth article, we'll walk you through the entire overclocking process—from understanding what the CPU can do, to selecting the right cooling solution, to tweaking BIOS settings and measuring results. By the end, you'll know exactly how to get the most out of your **amd phenom ii x4 955 black edition overclock** without compromising stability.

### Why Overclock the Phenom II X4 955?

The Phenom II X4 955 was released in 2010 with a base frequency of 3.2 GHz and a boost of 3.5 GHz. While respectable for its time, many users find that the processor lags behind modern CPUs in CPU intensive tasks. Overclocking can bring the clock speed closer to 4.0 /GHz or more, translating into:

- Improved gaming frame rates, especially on titles that rely heavily on single thread performance.
- Faster rendering times in video editing and 3D applications.
- Enhanced multitasking for demanding productivity workflows.
- A cost effective way to extend the lifespan of a mid range system.

Because the Phenom II X4 955 Black Edition already comes with a slightly higher multiplier and a more robust silicon design than its standard counterpart, it's particularly well suited for overclocking.

### Understanding the Core Components of the Phenom II X4 955

Before diving into settings, it's helpful to know the key parts that influence performance:

1. Multiplier (M) – Determines how many times the base clock (BCLK) is multiplied to produce the core frequency.
2. BCLK (Base Clock) – The fundamental clock rate; changing it affects all components tied to the system bus.
3. Voltage (Vcore) – The core voltage; raising it can stabilize higher frequencies but increases heat.
4. Cache and Memory Timings – Tweaking L2/L3 cache and RAM timings can further squeeze performance.
5. Thermal Design Power (TDP) – Indicates the heat output; the 955 Black Edition has a 95 /W TDP.

Balancing these variables is the essence of successful overclocking.

### Prerequisites: What You Need Before Starting

To safely and effectively overclock the Phenom II X4 955 Black Edition, gather the following:

- Motherboard with a BIOS that supports BCLK and multiplier adjustments (ideally a B550 or X470 chipset).
- Reliable power supply (650 /W or greater) to handle increased power draw.
- High quality cooling solution (air cooler or AIO liquid cooler rated for 120 /W or more).
- Temperature monitoring software (e.g., HWMonitor, CoreTemp, or AMD's own Ryzen Master for legacy support).
- Stress testing utilities (Prime95, AIDA64, or IntelBurnTest).

- Backup of critical data—overclocking carries a small risk of instability.

## Step by Step Guide to Overclocking the AMD Phenom II X4 955 Black Edition

Begin by ensuring your motherboard's BIOS is the latest version. Manufacturers often release updates that improve CPU compatibility and provide additional overclocking options. Visit the support page for your motherboard model, download the latest firmware, and follow the vendor's instructions for flashing.

Before making any changes, record your current performance metrics:

1. Run a full system benchmark (e.g., 3DMark Fire Strike, Cinebench R20).
2. Record core temperatures at idle and under load.
3. Take note of the current core frequency and voltage.

These numbers will help you gauge improvement and detect regressions.

Restart your computer and press the appropriate key (usually Del or F2) to enter the BIOS. Navigate to the "Advanced" or "OC" (overclock) section. The exact naming varies by manufacturer, but you should see options for:

- CPU Multiplier
- CPU Core Voltage (Vcore)
- BCLK (Base Clock)
- CPU Cache Settings
- Memory Timings and Frequency

The most straightforward way to raise the core frequency is by bumping the multiplier. For the Phenom II X4 955 Black Edition, the multiplier ranges from 8x to 16x. Each step increases the core clock by 200 /MHz.

1. Set the multiplier to 12x (3.8 /GHz) as a starting point.
2. Save and reboot.
3. Run a short stress test (Prime95 small FFTs) to check stability.
4. If the system crashes or shows errors, reduce the multiplier slightly or adjust voltage.

Higher multipliers often require increased voltage to maintain stability. However, raising voltage too high can damage the CPU or cause excessive heat. Follow these guidelines:

- Start with the default voltage (usually 1.35 /V).
- If instability occurs, increase in 0.01 /V increments.
- Monitor temperatures; keep core temperatures below 85 /°C under load.
- Once stable, consider "auto" voltage mode if your BIOS supports it to keep voltage as low as possible.

Altering BCLK can help fine tune the entire system but is less common due to its impact on all bus dependent components. If you're comfortable with more advanced tweaking, try:

1. Lowering BCLK by 1 /MHz to reduce overall system noise.
2. Increasing BCLK by 1 /MHz to push the CPU slightly higher, but be cautious of memory and PCIe timing conflicts.
3. Always re run stress tests after BCLK changes.

For the Phenom II X4 955, the L2 cache is 2 /MB per core, and the L3 cache is 8 /MB shared. Adjusting cache timings can yield marginal gains:

- Set L2 cache latency to 11 12 12 36.
- Set L3 cache latency to 9 12 12 36.
- Apply conservative memory timings: 12 16 16 38 at 2133 /MHz.

After each adjustment, run a comprehensive stress test for at least 30 minutes. Monitor temperatures, voltages, and system stability. Once stable, re-benchmark to quantify performance improvements.

Use a spreadsheet or a simple table to track each change and its impact. Look for diminishing returns—if a 10 MHz increase yields only a 1% performance boost but raises temperature by 5 °C, it may not be worth it.

Many BIOS interfaces allow you to name and save overclock profiles. Save a “Baseline” profile (stock settings) and an “Optimized” profile (your final overclock). This makes it easy to revert if you encounter issues later.

### **Cooling Solutions: Keeping Your CPU Safe**

The Phenom II X4 955 Black Edition can reach temperatures above 90 °C under heavy load when overclocked. Proper cooling is essential:

High performance air coolers from Noctua, Cooler Master, or be quiet! can handle the 95 /W TDP. Look for:

- Large heatsink surface area.
- Low noise fans.
- Compatibility with 120 /mm or 140 /mm fan mounting.

A 120 mm or 240 mm AIO cooler can provide better cooling under sustained overclocking. Ensure your case supports the radiator size and that the pump is reliable.

For extreme enthusiasts, a custom loop offers the lowest temperatures but requires significant investment and maintenance.

Don't overlook the importance of quality thermal paste. Apply a pea size amount of Arctic Silver 5 or Thermal Grizzly Kryonaut for optimal heat transfer.

### **Common Pitfalls and How to Avoid Them**

- Over voltage – Exceeding 1.5 /V can permanently damage the CPU. Always monitor voltage closely.
- Insufficient Cooling – Even a modest overclock can push temperatures into unsafe territory. Use a robust cooler and keep airflow optimal.
- Neglecting System Stability – A stable overclock is more valuable than a high clock that crashes. Thorough stress tests are non-negotiable.
- Ignoring BIOS Updates – Firmware bugs can affect overclocking performance. Keep BIOS current.
- Inadequate Power Supply – Overclocking increases power draw. A weak PSU can lead to random reboots.

### **Benchmark Results: What to Expect**

Below are typical results from a well-optimized overclock on the Phenom II X4 955 Black Edition, compared to stock settings:

- 3DMark Fire Strike: +12% to +18% score.
- Cinebench R20 (single thread): +15% to +20% time.
- Cinebench R20 (multi thread): +10% to +13% time.
- Gaming (1080p, 60 /fps baseline): +5% to +10% FPS on titles like Assassin's Creed III and Call of Duty: Modern Warfare 2.

These gains vary based on the exact overclock and cooling setup, but they illustrate the tangible benefits of a careful approach.

### **Long Term Reliability: Maintaining Your Overclock**

Once you've found a stable overclock, keep these best practices in mind:

- Regularly check temperatures and voltages with monitoring software.
- Re-run stress tests annually or after significant system changes.
- Keep your BIOS and firmware up to date.
- Consider adding a small fan controller to fine-tune cooling during heavy workloads.

### Alternative Overclocking Methods: Bypass the BIOS

Some users prefer to use software tools to tweak settings on the fly. For legacy CPUs like the Phenom II X4 955, tools such as *AMD Overdrive* (if still available) or *CPU-Zcan* provide limited control. However, BIOS-level adjustments remain the most reliable method for stable overclocking.

### FAQ: Quick Answers for Overclocking Enthusiasts

### Baca Juga (Artikel Terkait)

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