## ABIT NV8 the Sempron's Best Friend

ABIT NV8 Intro

The ABIT brand of motherboards is very well-known for massive overclockability. And as they are aimed squarely at the middle to high end DIY market, they naturally don't come cheap. The market, however, needs products from all segments, starting from affordable entry-level to pricey feature-rich high-end. For more price-sensitive users, there are also high price-performance items such as this ABIT NV8 motherboard.

Found at Newegg.com at a price below $80, this Abit motherboard represents an immense value as we don't detect any discounts in functionality or quality. And that makes it the Socket 754 processor's best friend and really good news for users who are currently contemplating building a Sempron (Socket 754) system. These users want price and respectable levels of performance, and this motherboard has got both.

As we already know, there isn't really an obvious performance gap between the Socket 754 and Socket 939 Athlon 64 processors. This motherboard can therefore be used to erect a high-performance Athlon 64 computing platform. As such, it isn't entirely fair to call the Socket 754 a low-mid-range choice. With ABIT's industry-leading overclocking technologies, this motherboard can therefore be used to erect a high-performance Athlon 64 computing platform.
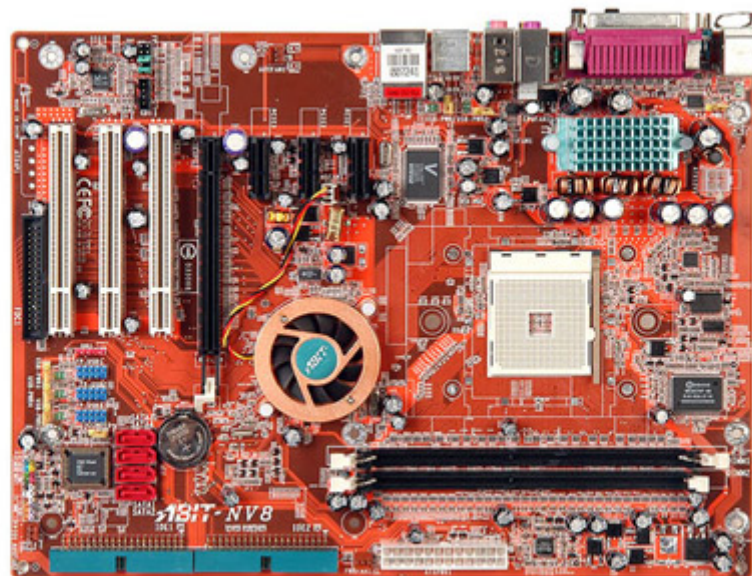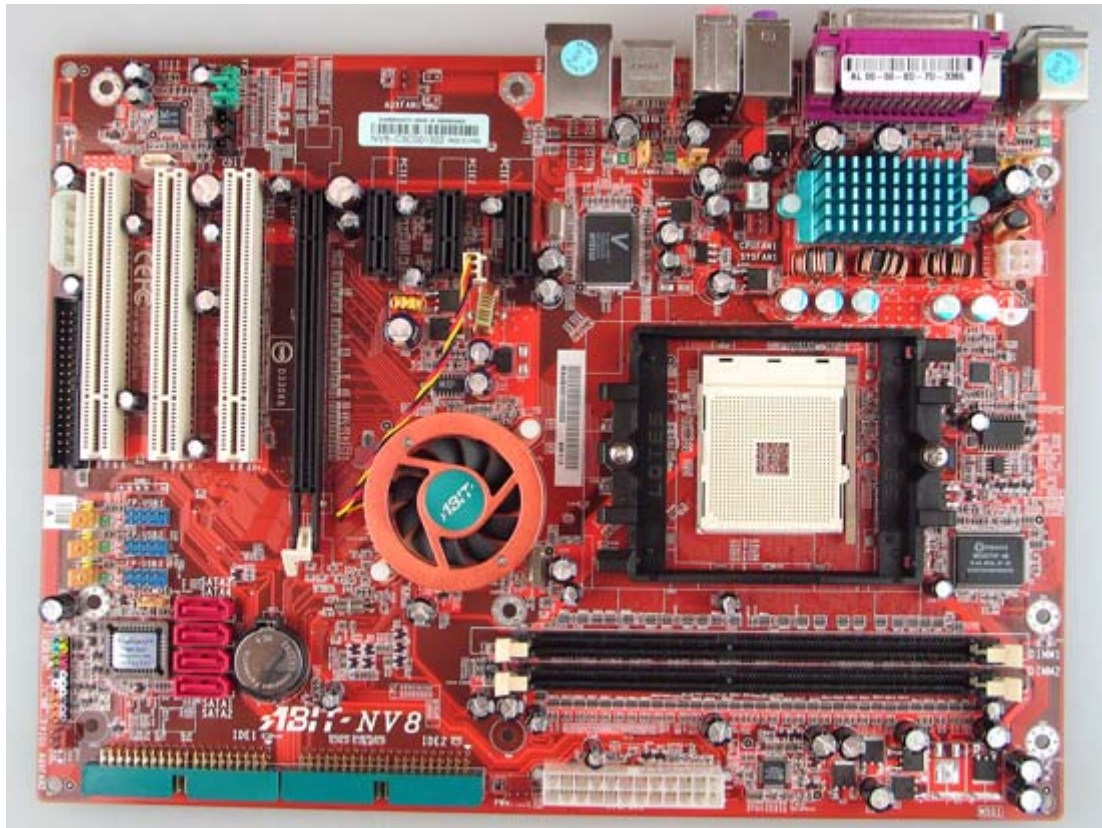

The above is an officially-supplied shot of the NV8 motherboard.

This motherboard is packed for the price. It comes with 4 SATA data cables and a USB expansion bracket (with two USB ports). It doesn't get much better than this for the asking price.

Specifications

Like many other nForce4-4x motherboards, the Socket 754 ABIT NV8 motherboard supports the Socket 754 Athlon 64 and Sempron processors. As we see in the image above, this motherboard is designed to take into account the majority of requirements out there. This motherboard has seven expansion slots (1 PCI Express x16 graphics card slot, 3 PCI Express x1 and three PCI slots) and 4 SATA ports with RAID support as well as 2 PATA pots.
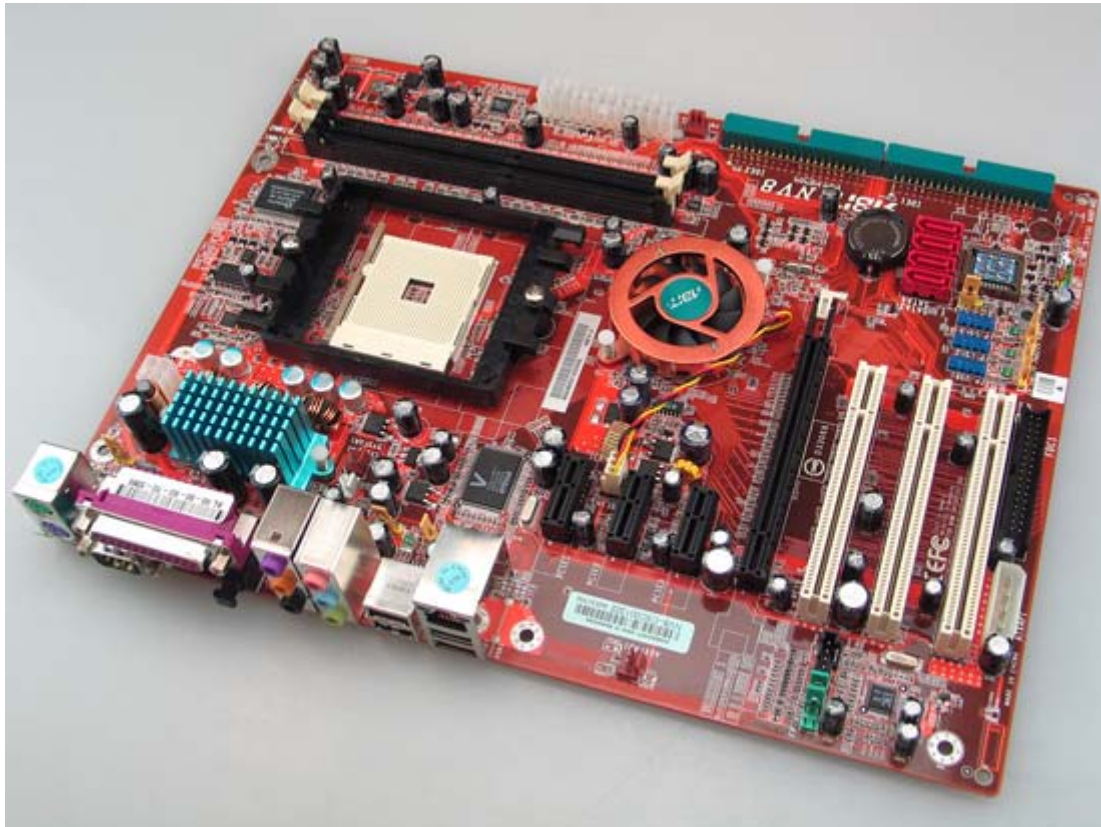
| ABIT NV8 Specifications	
Chipset	nForce4-4x
CPU support	AMD Athlon 64/Sempron (Socket 754) HyperTransport: 800MHz
Memory support	DIMMx2 Single channel DDR400
Graphics interface	1 PCI Express x16 slot
IDE	Ultra ATA/133x2 SATA x4（RAID 0/1/0+1）
LAN	nForce4 built-in Gigabyte MAC with external Vitesse PHY
Sound	Onboard Realtek ALC850 7.1 channel Codec
Expansion slots (non graphics)	3 x PCI Express x1 3 x PCI
USB	USB2.0 x10 (6 motherboard headers)

Close Ups: Rear IO Panel, SATA Port. Expansion Slots
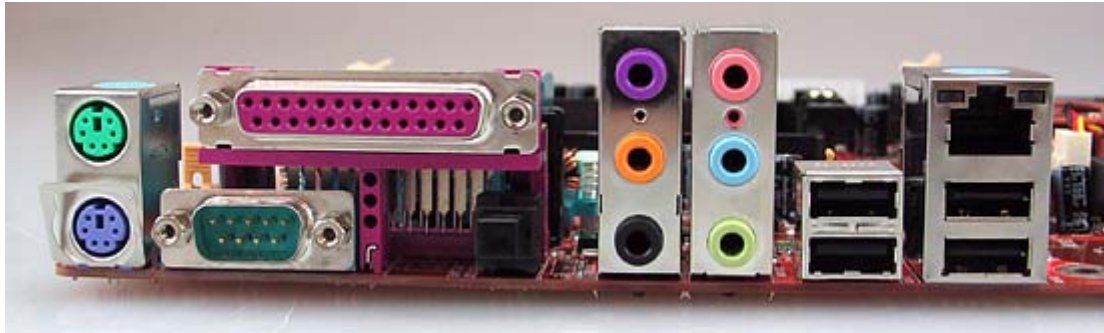
Being a non-high-end product, the NV8 is surprisingly well-equipped with a RJ45 Gigabit Ethernet port and FireWire, though it doesn't provide dual Gigabit Ethernet ports. The rear IO panel is at once both feature-rich and practical with the indispensable PS/2 and USB ports, plus 7.1 channel audio output ports and an S/PDIF output port.
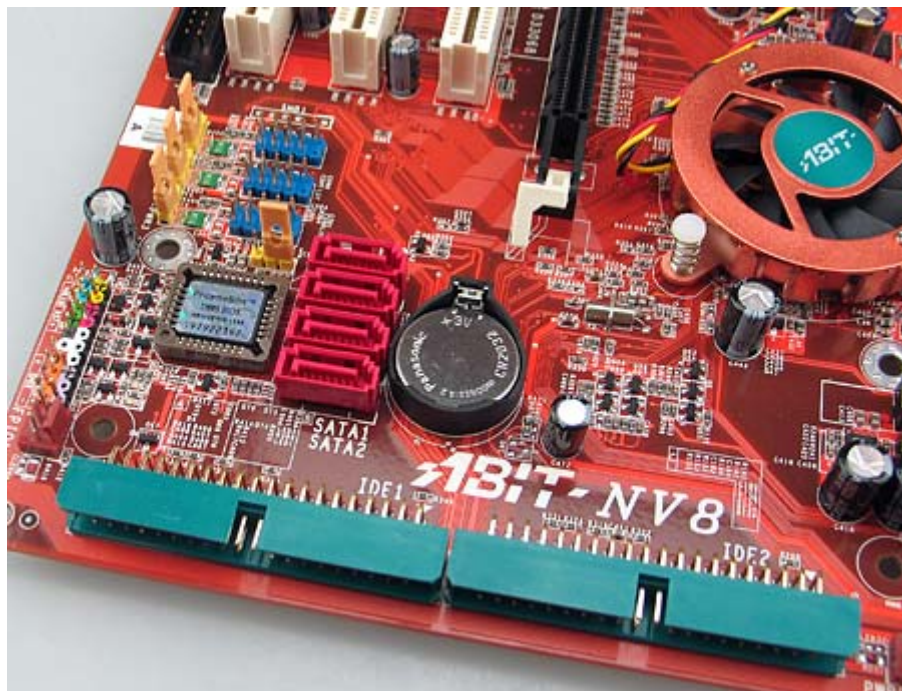
The motherboard's jumpers use the convenient classic ABIT lengthened design. In addition, the chipset cooler is molded from copper, which is excellent news for any member of the nForce4 family which often produce considerable heat.
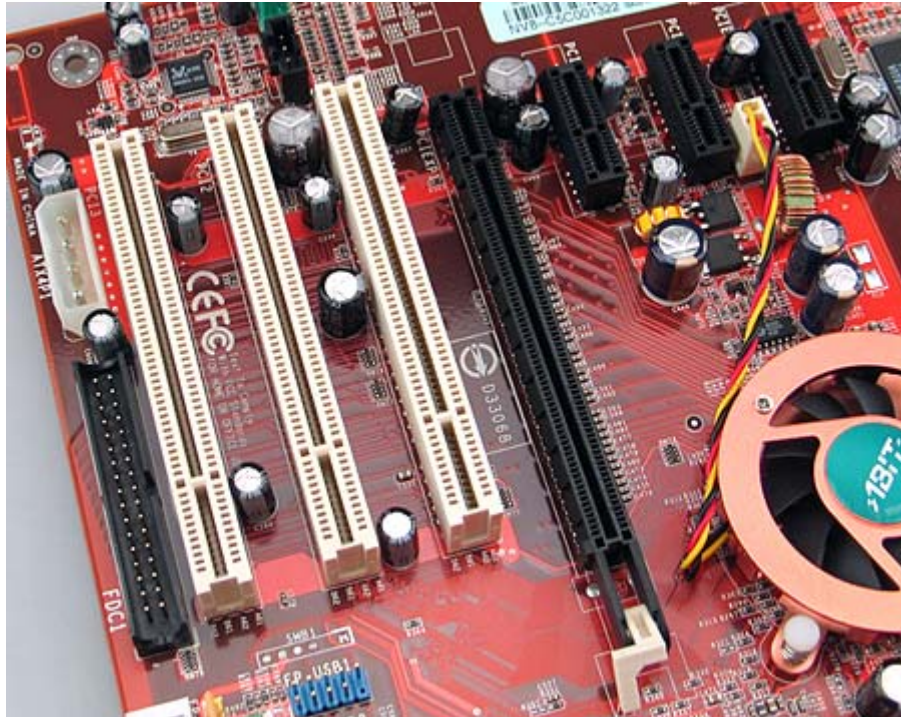
ABIT provides an auxiliary power connector for the PCI Express x16 graphics cards. The sheer number of expansion slots on the NV8 is really quite rare among entry to mid-range motherboards. There are three PCI x1 slots and three PCI slots in addition to the graphics card slot.

Close Ups: MCP and Onboard Devices

As we are quite aware of by now, many of the earlier nForce4-4x MCPs were actually "A2 edition" nForce4 products that were unable to work stably at 1GHz HT bus speed. This caused engineers to retard HT to 800MHz. The A2 were limited in number, and ours is actually the A3 edition nForce4 MCP that is able to operate at 1GHz HT bus speed.
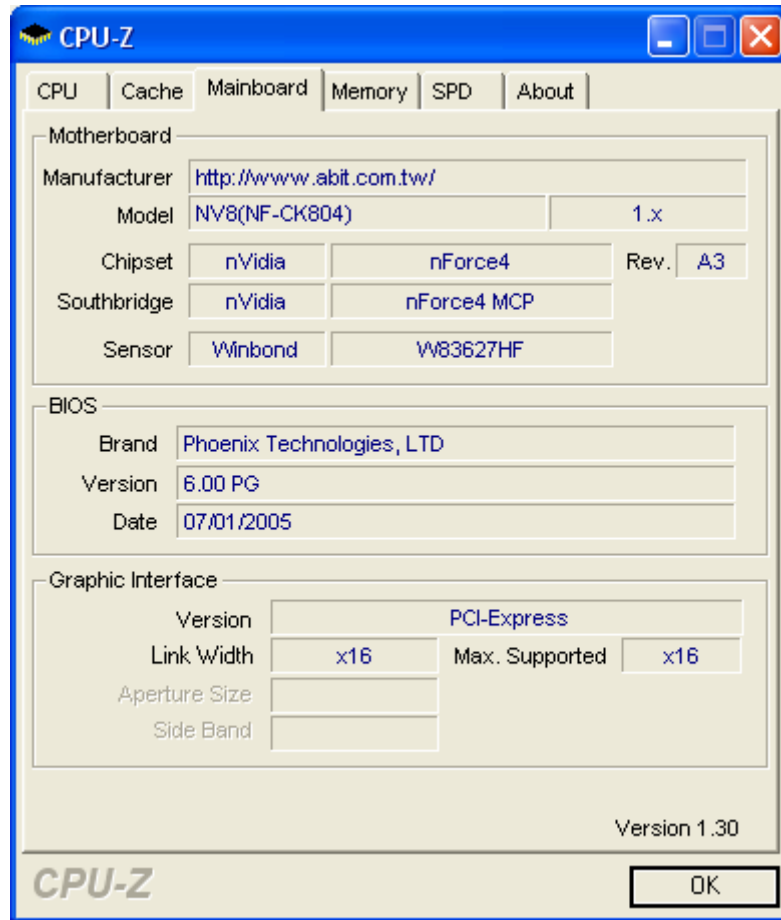
CPU-Z v1.30 also detects the A3 edition MCP
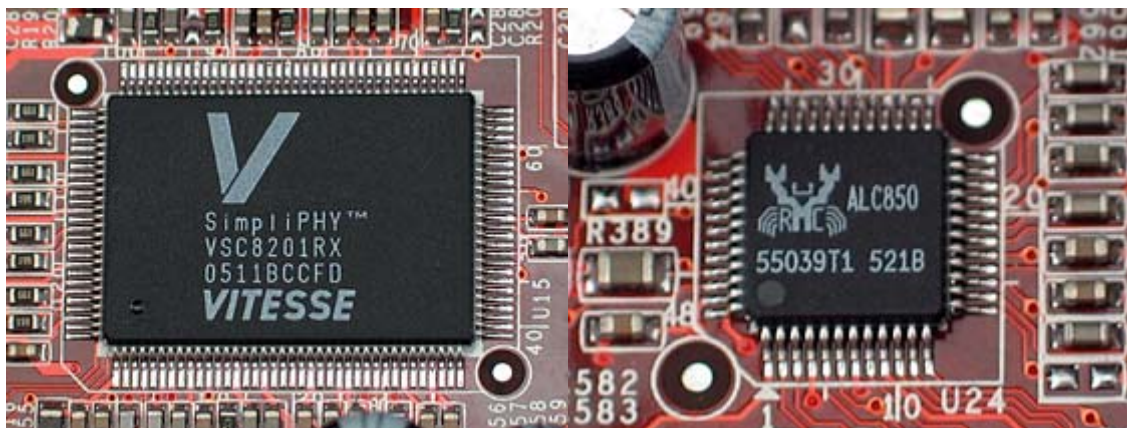
Vitesse VSC8201 Gigabit Ethernet PHY   Realtek ALC850 AC'97 Codec

This motherboard's Gigabit Ethernet ports are provided courtesy of the nForce4-4x's integrated MAC controller and the Vitesse VSC8201 PHY. This combination is used to provide full-duplex Gigabit Ethernet, and support for the NVIDIA firewall feature (the standard nForce4 and the -4x edition do not have the hardware security engine). Overall This motherboard has very strong networking features. ALC850 is adopted as the audio codec, which is very common among

nForce4 motherboards.   ABIT doesn't used lower grade ALC650 chip.

Close Ups: CPU power supply area and PCB tin stripes
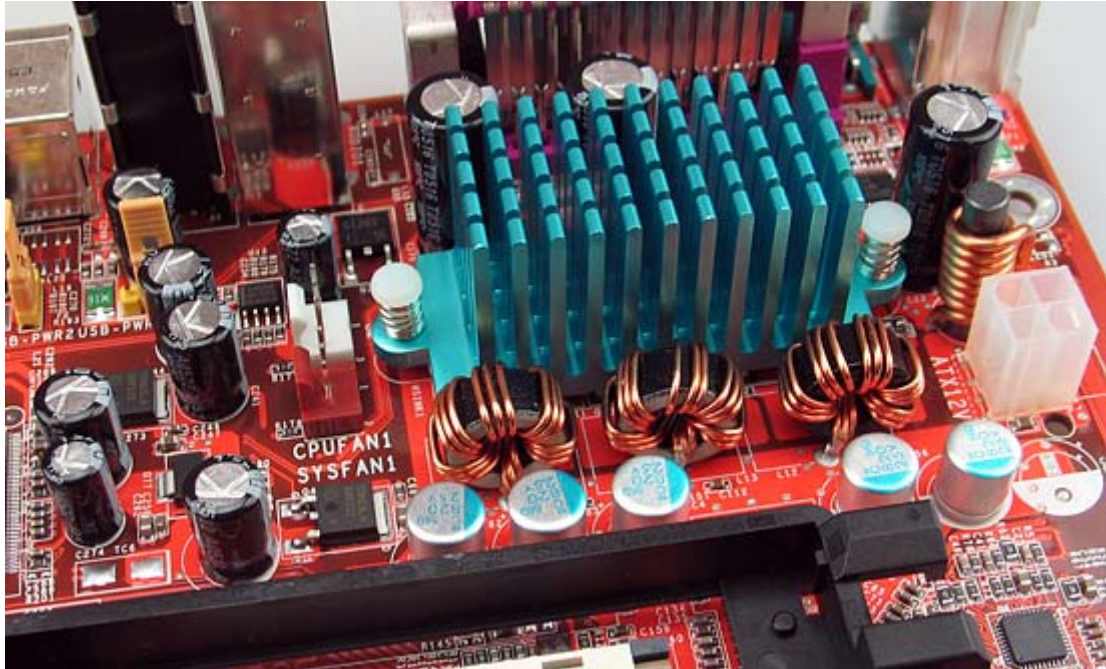
The NV8's CPU power supply is quite lavishly made with solid aluminum capacitors and MOSFET heatspeaders– something found rarely on bargain price motherboards.
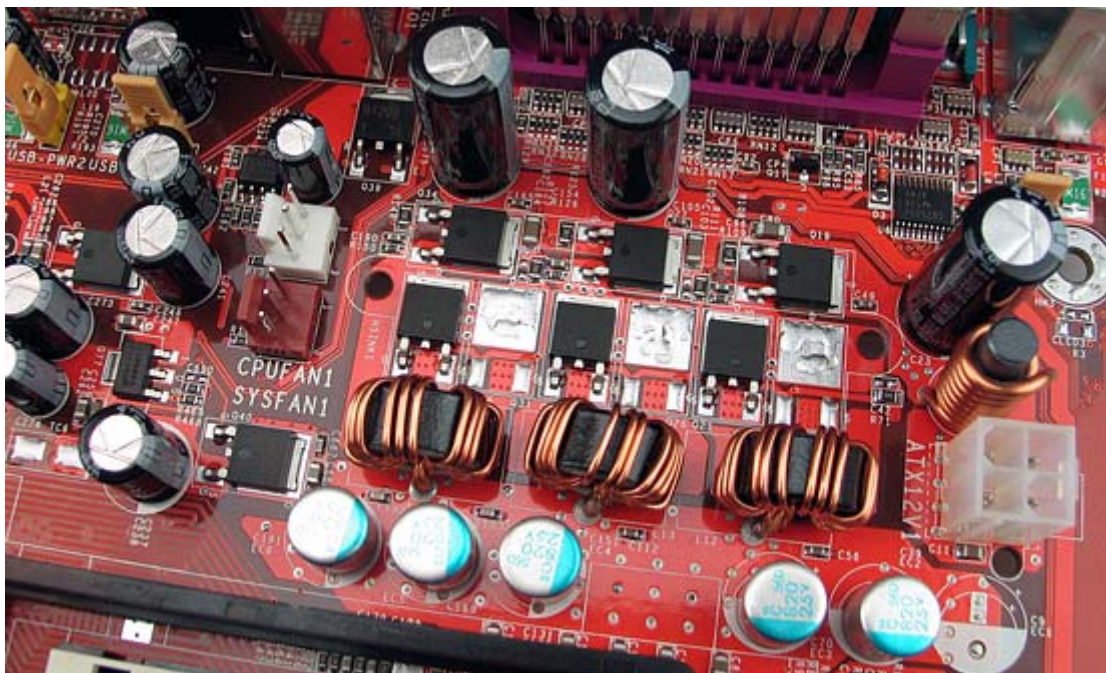
The above is a shot with the MOSFET heatspeaders removed. This 3-phase design uses 6 MOSFETs in all. Though each MOSFET will operate hotter, they can rely on the heatspeaders for added heat dissipation.
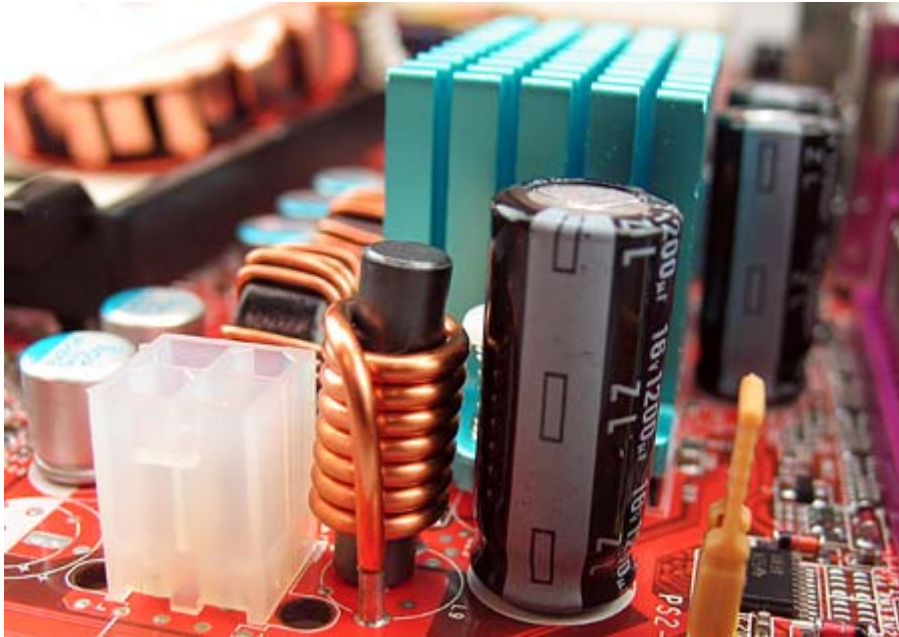
The NV8 uses only Japanese made capacitors, and most of them come from Rubycon. Praiseworthy indeed for such a humbly-priced product.

At the back of the motherboard are tin stripes used to aid cooling of the PCB. This a quite popular design today, and it definitely helps.

BIOS(1)

BIOS version: 1.0

Boot up screen

Integrated Peripherals   System monitor

The Integrated Peripherals options are rich and complete with every onboard device being

accounted for. In the above right image we see that ABIT has provided a fan-speed control function to allow the user to have a greater hand in controlling fan noise.
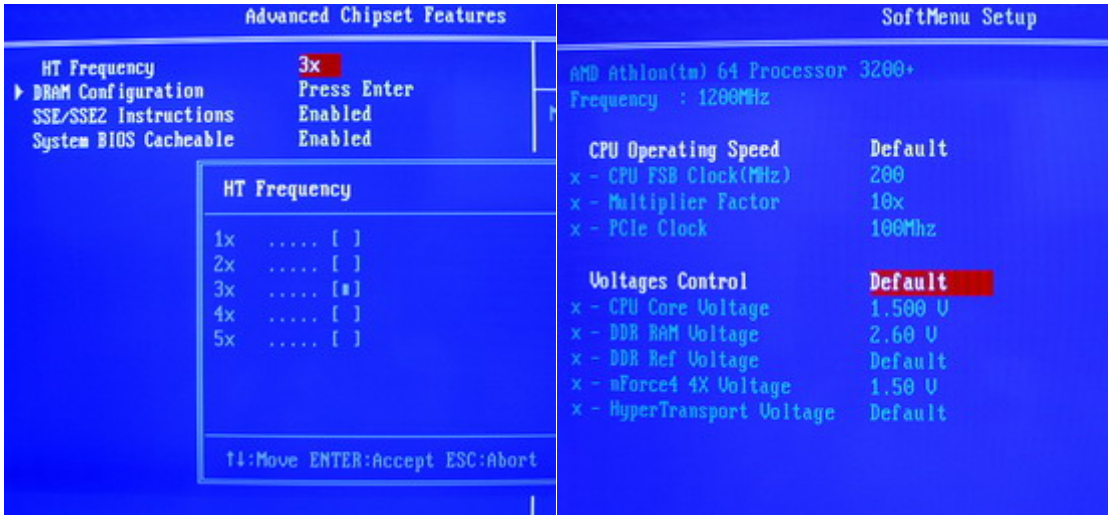
BIOS(2)

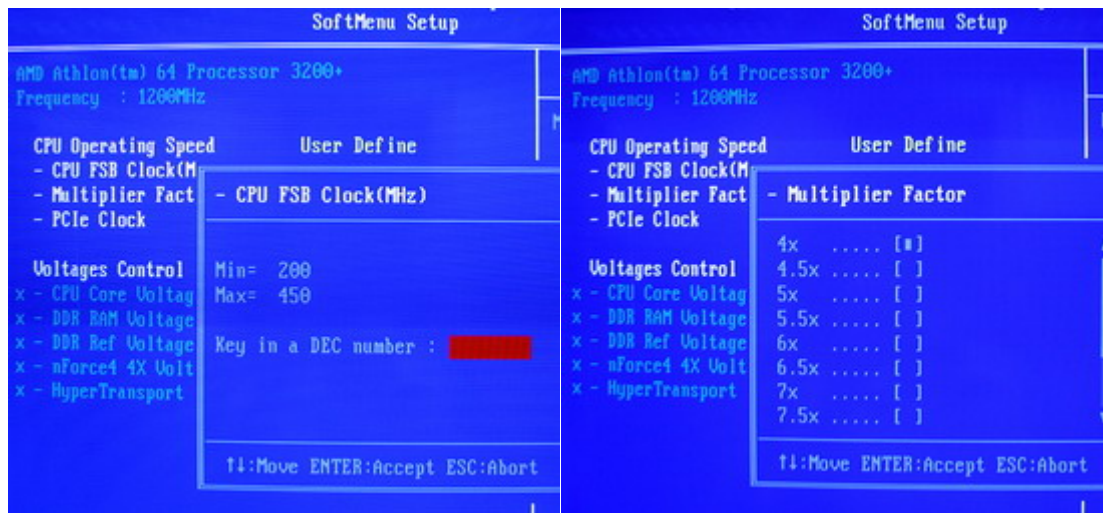| Memory configuration | Memory timing |

The options for memory configuration are quite complete.

| HyperTransport Frequency | Overclocking Options |

While the nForce4-4x officially supports only 800MHz HT bus speed (4x), this motherboard is actually is the same as a standard nForce4 product that allows 1GHz HT speed, though Socket 754 CPUs still run at 800MHz.
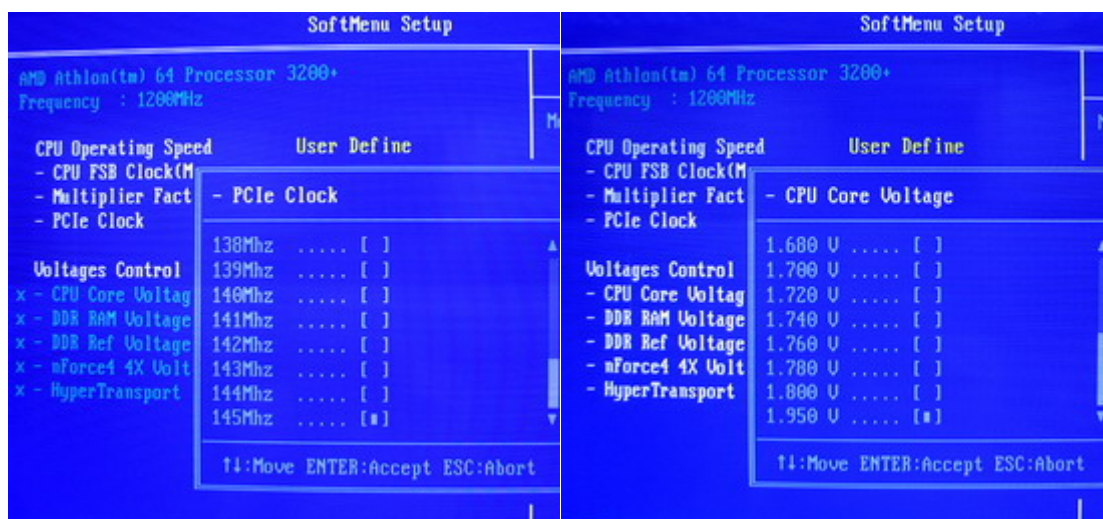
| CPU FSB Clock | CPU Multiplier |

The CPU FSB clock is limited to 450MHz, which is plenty high.

BIOS(3)

| PCIe frequency | CPU Voltage |

ABIT is the poster boy for motherboard overclocking – here too it provides a wealth of overclocking options with high enough adjustment margins. CPU voltage goes all the way up to 1.950V – that's definitely enough – and each increment is 0.02V with less accurate control than regular 0,0125V.

Memory Voltage

An upper limit of 3.2V on memory is satisfying enough for overclocking enthusiasts.

Chipset voltage   HT voltage

To ensure stability when overclocking, ABIT provides HT voltage adjustability.

Special Software: ABIT EQ (1)

The ABIT NV8 software complement contains the ABIT EQ and FlashMenu programs. FlashMenu is simply a BIOS update program; users can upgrade the BIOS while inside the Windows environment; retrieving the update file while connected to the internet. As there are many similar programs out there, we'll refrain from going into detail.
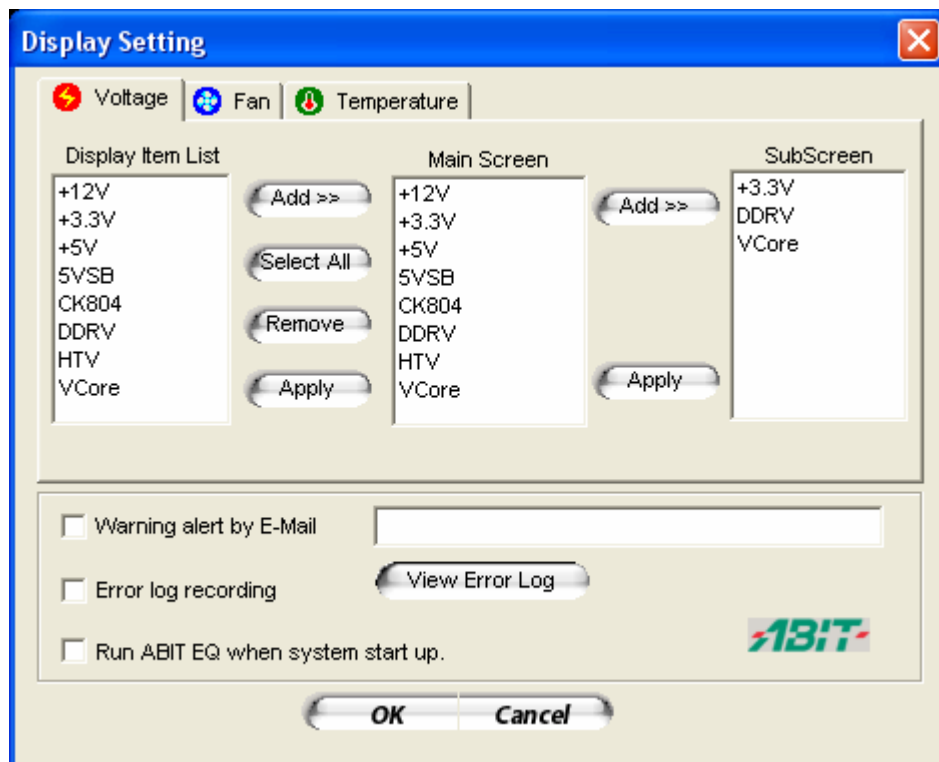
The ABIT EQ program is a system monitoring program capable of reporting temperature, fan speed and various voltage information.
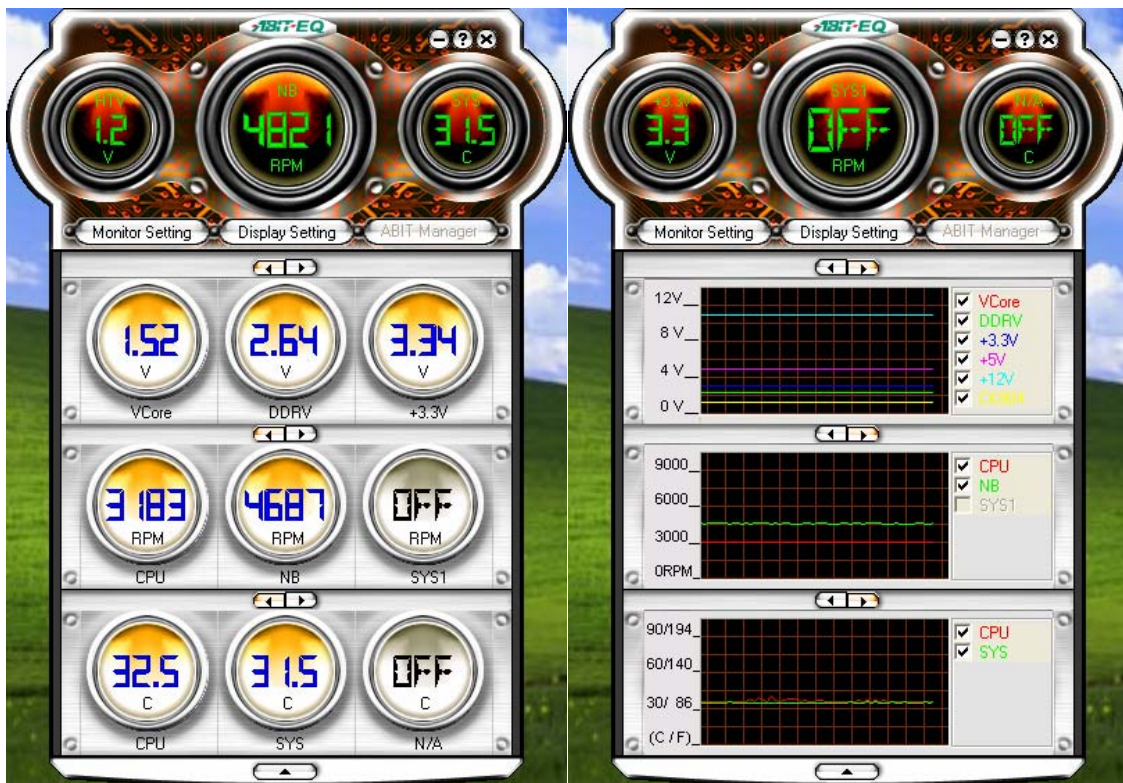
ABIT's software development capabilities are something to behold – this user configuration panel is very usable and easy to learn. Real time information and historical charts are both available for use.

Special Software :ABIT EQ (2)

The user panel is completely customizable and can be made to show only information the user wants. The system can even be setup to provide email alerts.
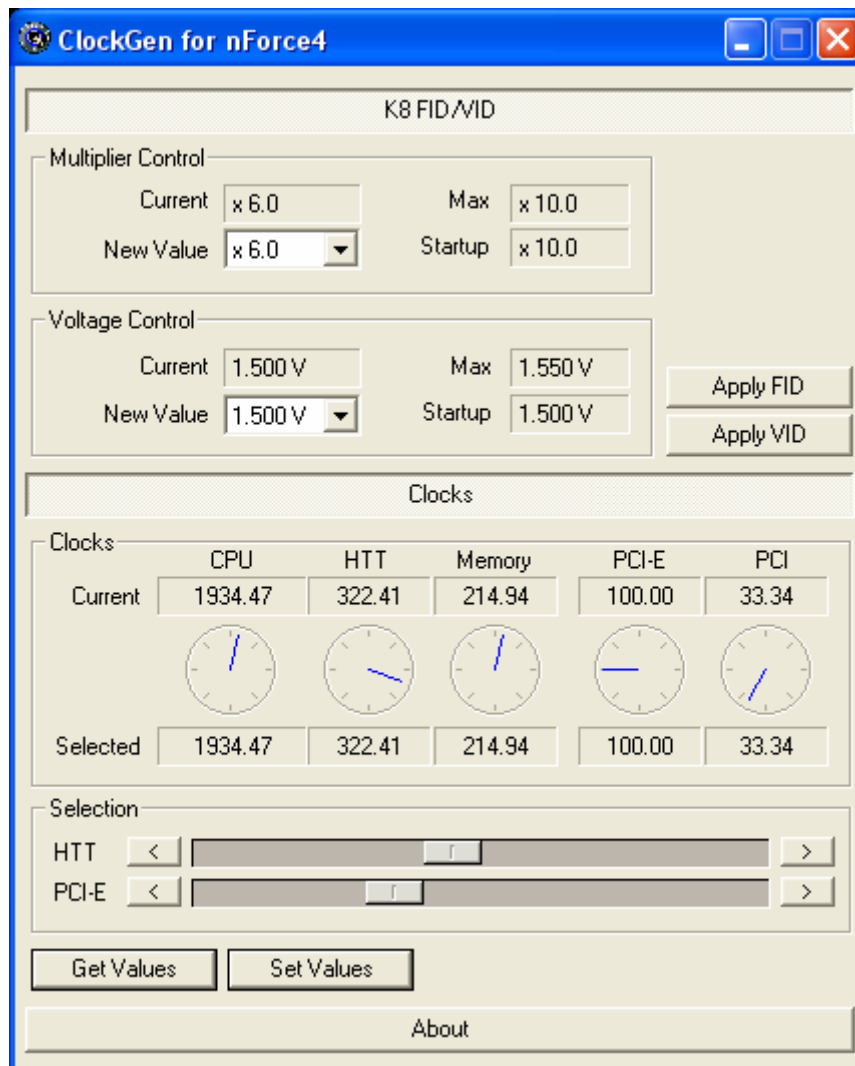
Beeps, alerts, and shut down safety options are completely user-defined.

Overclocking Test

ABIT motherboard offerings have made a name for being impressively overclockable. That is reason enough to include an overclocking test in the report.

Taking our efforts one step further, we utilized the ClockGen program for Windows overclocking.

ClockGen is capable of making adjustments to the CPU multiplier, voltage and HT frequency. The limitation is the 1.550V upper limit for the CPU voltage. This voltage can still be changed in the BIOS, though. If the HT bus is going to be seriously overclocked, make sure to go into the BIOS and set the HT multiplier to 3X or below.
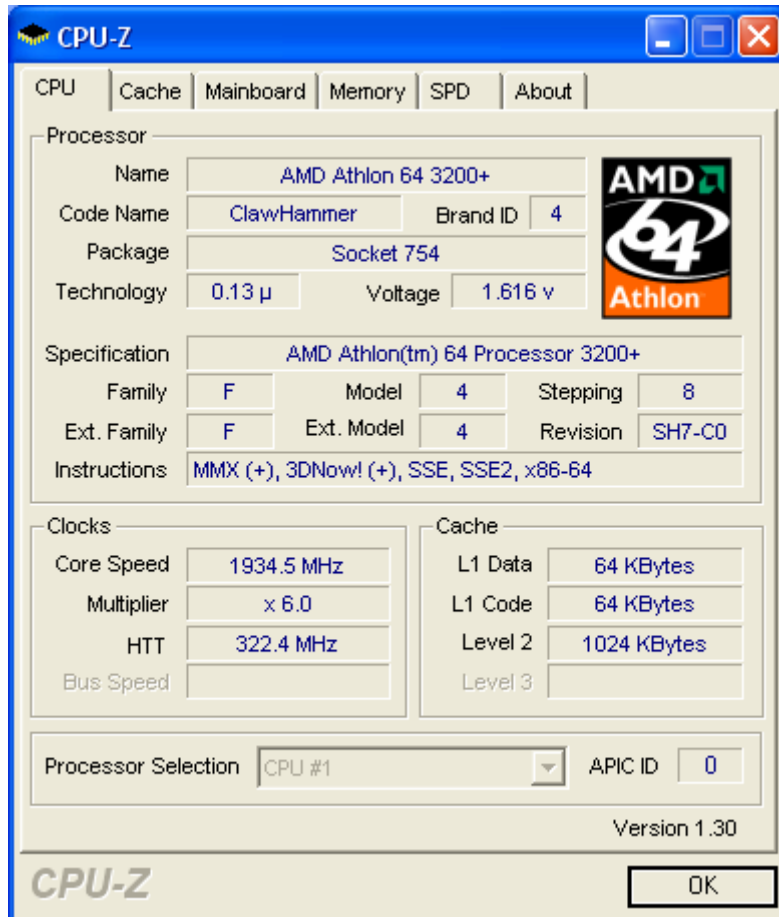
The ClockGen program allows the HT bus to be overclocked to a very impressive and still stable 322.4MHz, which is a frequency impossible for K8T800 Socket 754 motherboards. This proves conclusively that this ABIT motherboard has got outstanding overclocking performance.
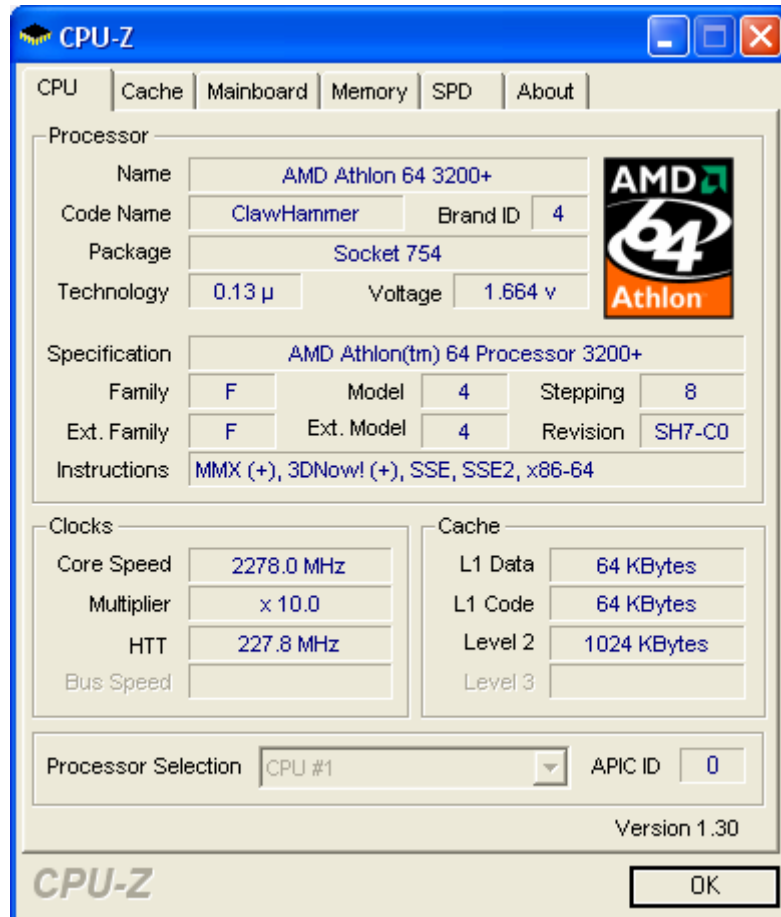
Our CPU is fabbed on the 0.13 micron process and is a bit old in the tooth, so it isn't that impressive in the overclocking potential. The upper overclocking limit for this CPU is approved to be 2290MHz. With the NV8 it is capable of 2278MHz, which almost reaches its limit.

Summary

At a price below $80 this nForce4 motherboard is a seriously good deal. And although the NV8 utilizes an nForce4-4x chipset according to the spec sheet, as we have already proven above, there is little that shows it is any different to a standard nForce4 motherboard.

The ABIT NV8 is outstanding both in terms of performance and stability, and features full support for PCI Express x16 graphics cards, Gigabit Ethernet, and the NVIDIA firewall; meaning that it's got most users covered.
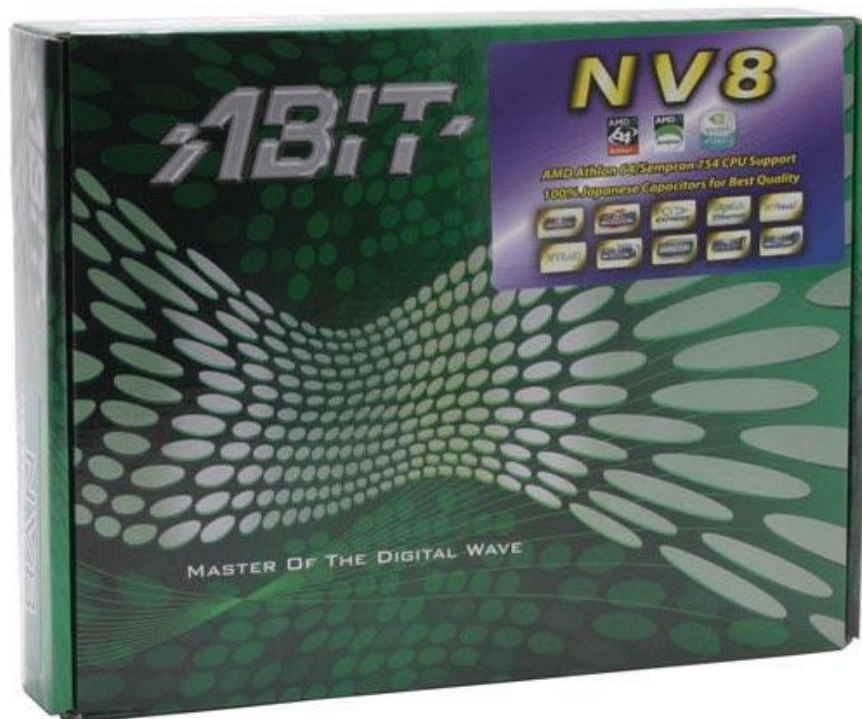
Overclocking is definitely one of this motherboard's strong suits. For now, it should be the overclocking leader among Socket 754 products.

The release of the 64-bit Semprons is sure to motivate purchasing for high-price-performance Socket 754 motherboards – especially those who are known masters of overclocking. Sempron processors have already been proven to be great overclocking candidates, and are in no way inferior to the Athlon 64 in that respect. This is definitely a major reason why users will opt for the Socket 754 platform, and the ABIT NV8 is poised perfectly for the task.