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Overclocking of CPU and graphics cards cooling refrigerator models offer the Xtreme (permanent use) in order to increase efficiency

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Abstract

Today, with advances in computer hardware manufacturing industry to further increase the quality of manufactured parts and enhance its features and functionality, the device is little evidence of widespread processing and communication tool among all segments of our society.The most important piece of overclocking the motherboard. So choose carefully and do not spend a lot of known and tested motherboards use.
All computer components can be overclocked, But the focus is more on the CPU and graphics card. Since everyday use (to be permanent, and no temporary) in overclocking mode in the lack of good cause instability and sometimes damage the cooling system segment is conventional cooling capability was not cool enough and thereby limit the performance and the final piece is to optimize.

Keywords: Overclocking, processor, graphics card overclocking Xtreme

Introduction

In the latter case, the heat from the chipset to the small size of 1 to 4 inches square. The problem is that both space limitations and restrictions to keep the chip temperature is below 100 ° C [4]. With so many moving parts and mechanical components on the desktop are unreliable. One of the serious problems overclocking the CPU fan's noise problem was with it. Great efforts in recent years to minimize the noise generated by the fans and the fans of overclocking has been slow CPU heat sink with efficient designs.So, the best way to eliminate the noise to remove these resources.Heat pipes, it may be a passive CPU cooling [5-7].
These devices are typically used to heat pipes of diameter 3-6 mm and less than 400 mm in length are preferred [8]. Most preferred length is 150 mm [9]. Application of heat pipes for cooling computer processors were launched in the last decade and is now 98 percent of notebook PCs using heat pipes cooled.An experimental study has been carried out by the freighter Tanim and [12].
To evaluate the performance of desktop processors, miniature heat pipe cooling with ID 5.8 mm and length of 150 mm with respect to the normal units CPU triggered. So far no research has been done for desktop CPU cooling with MHPs.Heat pipe heat sink is a passive cooling system that requires no moving parts, quiet operation, and more importantly, reliable. In addition to thermal heat pipe technology is affordable desktop solution designed for industry[13].
the filling ratio range of the operating heat pipe is better within 16–36% for total volume of finned tube-bank. The correlations related to the average heat transfer coefficient of the evaporator and the condensation Nusselt number of the condenser at the optimum filling ratio of the operating heat pipe are fitted from test data interpretation, which

can be reference to the practical applications. Considering the influence of heat transfer in condenser and geometric dimension of the heat pipe, the predicted correlations of liquid level in evaporator were obtained[14].
The results heat transfer rate increase with increasing coolant flow rate and higher channel.
When comparing with the other cooling system, cooling system with thermoelectric gives the highest efficiency.However, thermoelectric has the high or low heat transfer rate from heat rejected and cooling capacity conditions[15].
Typically, the process variation lowers the operating clock frequency of microprocessors, or it
causes more leakage power. Even worse, the effect of process variation is exacerbated with the advance of process technologies as shown in figure 1, which could eventually result in severe yield loss. To maximize the profit by preventing the yield loss, the process variation is incorporated in design rules according to the process technologies.

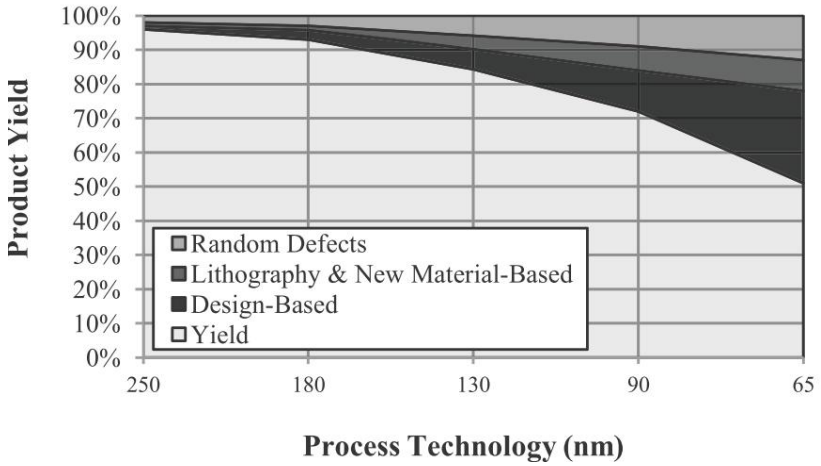

Fig. 1. Product yield factors with different process technologies [16]

Overclocking Techniques

Overclocking is provided in modern microprocessors to improve performance without additional expense. There are two methods in overclocking techniques: VFoverclocking and F-overclocking[17].

VFoverclocking

In the VF-overclocking technique, which is widely adopted in the conventional overclocking, both clock frequency and supply voltage are increased together beyond the specified limit.

By applying the VF-overclocking, the performance of microprocessors can be significantly enhanced due to the increase in throughput. However, it results in higher power onsumption since the dynamic power consumption is proportional to the clock frequency and the supply voltage squared. Even worse, the excessive switching in transistors from the VF-overclocking significantly increases the temperature of microprocessors, which eventually incurs reliability loss. The commercially adopted overclocking techniques, such as Intel Turbo Boost and AMD Turbo CORE, are also based on the VF-overclocking. In Turbo Boost and Turbo CORE, the VF-overclocking is dynamically applied based on the number of active cores to consider energy efficiency and reliability loss of the overclocked systems.

F-overclocking

We adopt the F-overclocking technique proposed in [18], where only the clock frequency is increased without changing supply voltage. Compared to the VF-overclocking, the F-overclocking consumes much less power, since only clock frequency is increased. Conse quently, it is superior to the VF-overclocking in terms of energy, EDP, and reliability. The VF-overclocking slightly improves performance compared to the F-

overclocking since the clock frequency can be increased further with the supply voltage tuning. However, the difference is not significant.

Originally OverClock

OverClock achieve a faster and of course the system is stable. But if your system becomes unstable after overclocking OverClock useless it would be useless. One of the reasons OverClock should be done gradually, finding the boundary of the instability. Now the question may arise as to how to consider sustainability. The answer is simple. To do this you must push the system in any way that you can enter. For example, heavy applications (such 3Dmax9) or heavy games (like Crysis) or software BenchMark (eg 3Dmark06) can eventually cause the pressure. (For example, you can run the software and Super PI calculates the number PI to 4 million decimal places of the Czech system stability and overclocking process can continue.)CPU speed is a product of two numbers is obtained. Frequency of the (FSB or HTT) and a multiplier (CPU Clock Ratio or CPU Multiplier). If we change any of these are able to overclock your CPU. But usually the CPU Multiplier is locked and unable to lift it and just cannot make it down to exclude some specific processors such as the AMD 5000 + BE or BlackEdition (OverClock'll see the results), or some XE or the Intel Extreme CPU Multiplier that it is open, and have a high price, and are not usually affordable. So the only remaining solution is to change the FSB. Next steps for various motherboards generally said to be so different. Here you can find the CPU frequency settings. For example, Fox Central Control Unit for motherboards FOXCONNE and Cell Menu for motherboard MSI and SoftMenu or MGuru for motherboard Abit (figure.2) and IWill Smart Settings for motherboards IWill and MIT for motherboard GIGABYTE (if the motherboard GIGA menu no key combination Ctrl + Try F1). Usually the default CPU frequency does not change. Then look for an option to enable this feature. Ie Adjust CPU Clock and Enable CPU Host Clock Control and get it.

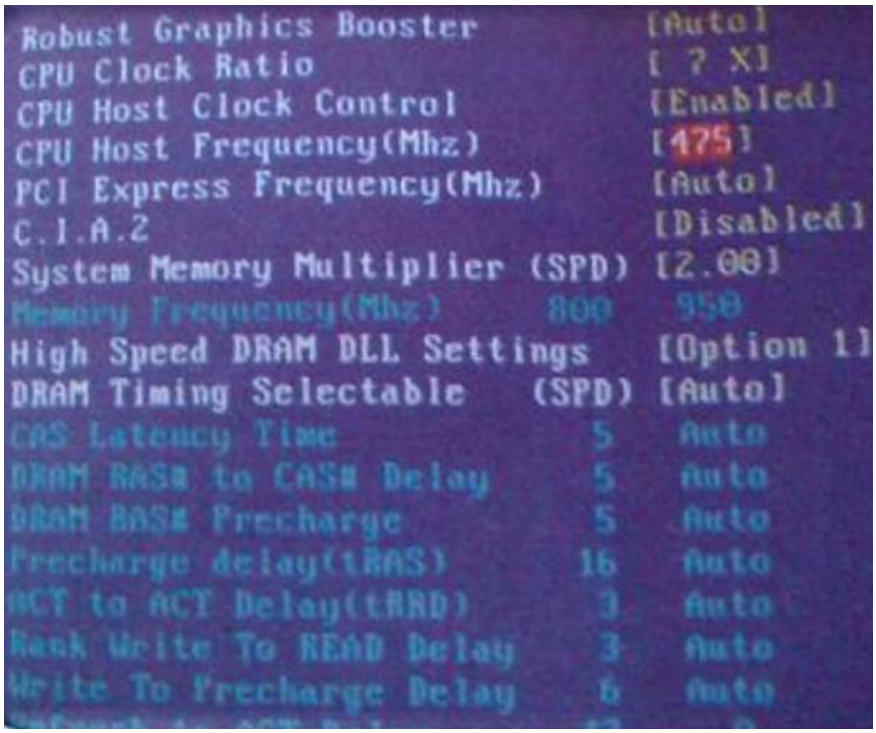

Fig. 2. CPU frequency settings for Abit motherboards

Glacial cooling model proposed permanent

This includes the engine and the cooling system is it has a refrigerator compressor motor, which is using electrical energy to produce cold through the evaporator designed to cool CPU or
graphics card or any device intended to transmit overclocking action do it permanently.

With this device can be used as part of the processor and graphics card Xtreme and so long as liquid nitrogen to minus 196 degrees celsius maximum temperature, dry ice and liquid helium to minus 65 degrees celsius minus 255 degrees celsius temperature cool building and do not even use the application to do overclocking.

This device produces high cold (to minus 196 degrees) enhance the overclocking capability of computer hardware this will increase the efficiency and optimize the system. This small device can be a server or even a home system to overclock the servers at many times the price for the system will increase. Among the advantages of this device can be easily installed on any system out. If this device is used in powerful servers, multipliers presentation server for the server to respond to the needs of the owner. Overview of the refrigerator's cooling system can be seen in figure 3.

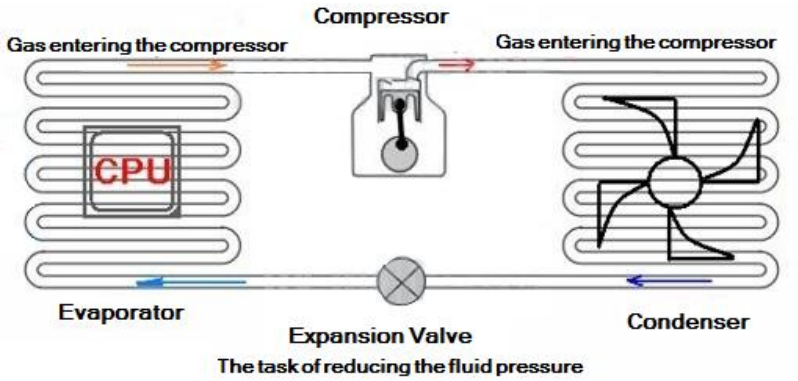

Fig. 3. Overview of glacial cooling

How to Calculate : For Intel CPU and RAM frequency

FSB * Memory Multiplier = Memory Frequency (MHz)

Example:
FSB = 200MHz, and Memory Multiplier = 4X

Memory Frequency (MHz) = 4 * 200 = 800MHz

The AMD CPU and RAM frequency is calculated as follows:

CPU Clock / (Ceil (CPU Multiplier / 2)) = A

Function Ceil () is the smallest integer greater than or equal to the value inside the parentheses returns.
Example:
AMD 4000 and 800MHz RAM

CPU Multiplier vs. 10.5X for the CPU and the FSB to 200. Thus 2100MHz CPU Clock will be equal to it.

A = 2100 / (Ceil (10.5 / 2)) = 2100 / (Ceil (5.25)) = 2100/6 = 350

If your RAM is DDR1 RAM frequency as you would be if A is the frequency of DDR2 RAM will be 2 * A. In the case of DDR RAM frequency to obtain it must be multiplied by 2. (Which for this example would be 700MH.) You can see that the AMD CPU RAM usually does not work up to their ability.

For Intel CPU's have look for Memory Multiplier and set it up according to the above formula for Intel CPU and RAM frequency is within his abilities. (2 * 475 = 950MHz)

The AMD CPU and RAM frequency to be a down stairs, for example, if your RAM is DDR2 800 to DDR2 667 change it. The result of the function as a unit Ceil () will be added. In 2100, for example, the example above will be divided by 7 instead of 6. So you can set it up according to the above formula for the AMD CPU RAM frequency is within his abilities.

One of the important issues that must be addressed is the power control system. These systems have the AMD processors to Q & Q (Qool & Quiet) and Intel processors for S & S (Speed Step) famous. The system when the CPU does not need maximum processing power to reduce energy consumption by lowering the processor frequency and voltage are. These systems can OverClock problem. Setup your own in the motherboard, so look for it and disable it (Disable) on.
Looking for Intel platform and TM2 and C1E and EIST Function Disable all to no affect on OverClock does not come. (Usually you have these options can be found in the Power Option or Features Advanced Chipset.)

Now that we know ram is OverClock ready to go, but for the CPU FSB Intel and not AMD. The AMD CPU is necessary to mention one other thing.

There is a term called the AMD CPU and HT Link frequency of the beat track (FSB) is obtained in the HT Speed. In Auto mode, the coefficient is equal to 5X depending on the capabilities of the motherboard and conditions OverClock or 3X 4X put it on. For the system to be stable between 850MHz-1000MHz HT Link OverClock be kept. Of course, it takes more time (for example, my motherboard was stable up to 1200MHz), but for most motherboards stability will be lost.

After the above settings for the HT Link and Memory Multiplier and Q & Q, and S & S and ... For RAM, motherboard and ... We need to increase the FSB. This system can be applied in many cases, such as the optimization of a single jet with cross flow heat transfer in two variables has been noted[19].

Stability testing of components

The most important part of the practical overclocking, stability evaluation system. Indeed, when successful, can be considered to overclock the system without any problems (either hangs or freezing) in a long time, without interruption, to continue to operate.
For this purpose the software components used are pressed. Such applications usually repeat a particular algorithm, such as calculating the number "pi" or Newton's method for estimating functions and other mathematical functions, memory, and CPU-GPU implementation of a 3D scene (GPU) are under pressure. If after a certain time the system will continue to operate without problems, complete system stability can be guaranteed. Valid in the context of software for the processor and memory can be tested Prime95, Orthos, OCCT, IntelBurnTest and to test GPU ATI Tool, OCCT GPU and FurMark noted. During the test, such as maximum temperature can be seen rising from the fragment. Such software can be the most prestigious Real Temp, Core Temp, Everest and HWMonitor noted. Figure 4, the tests have been proposed by the software with the Super PI Mod 8 million decimal places in results in the 4.6 and 5.5 and 5.8 GHz with the stock three shows.

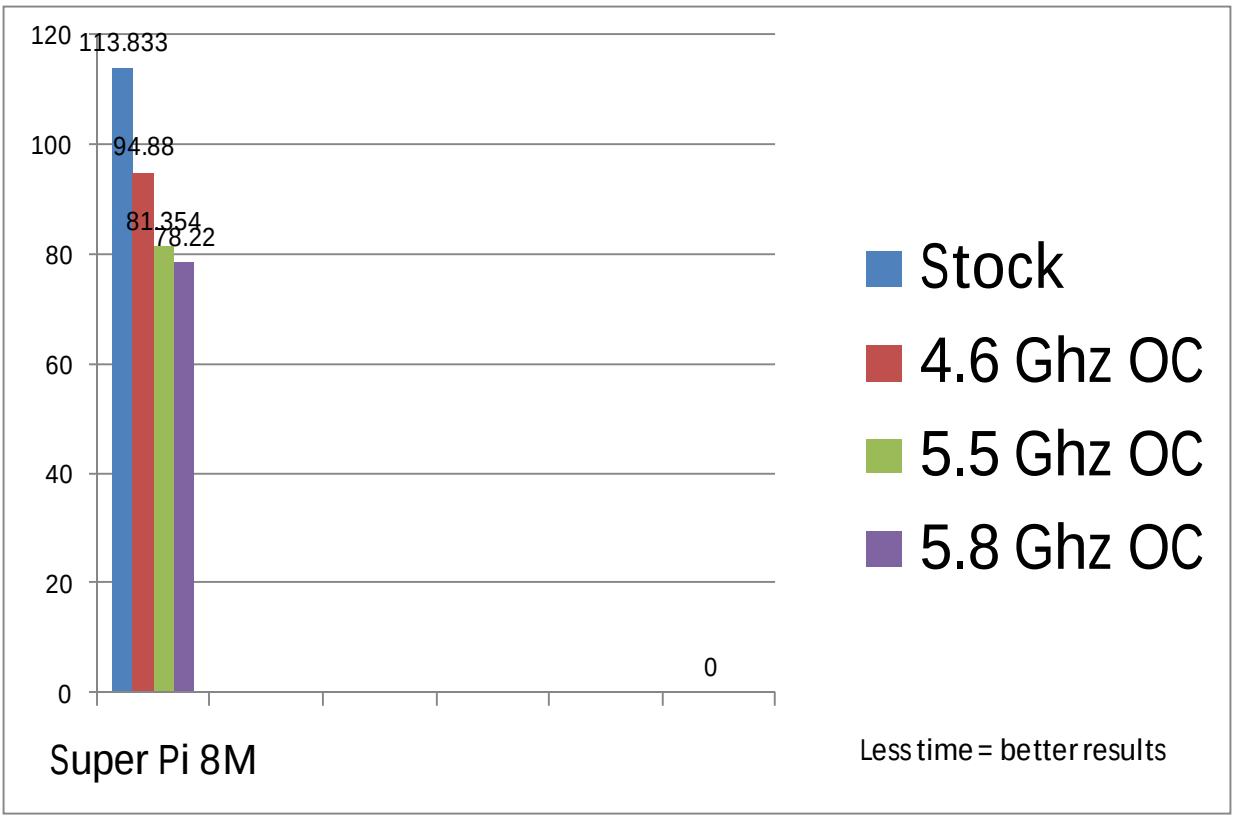

Fig. 4. Test taken by Super PI software modes 1 million decimal

As shown in Figure 4 was observed, increasing the CPU frequency in the three-state mode with Stoke at overclocking with cooling suggested that the results obtained in 2106 seconds decreases the time to calculate pi to 8 million decimal places, ie 44% speed increase in the computational processing can be observed.That's an example to demonstrate the efficiency of the cooling system processor is proposed.

Conclusions

The main objective of this paper was also familiar with overclocking, offer optimized overclocking CPU and video card to use in everyday household and industrial Xtreme.You can increase your system performance by overclocking. Today companies make it possible for every piece of components such as processors, computer motherboards, graphics cards and ... With the specific settings are available for users. Overclocking the major issue is heat.Factory default frequency and power when the device is in operation, heat is shed by a fan. But when it comes to overclocking and temperature rises exponentially and makes the system unstable.reduce the cost of this device is quite remarkable in comparison with the same properties is external.

The proposed device has a very low temperature and high overclocking capability cold and very low production efficiency increases exponentially superconductive at very low temperatures due to increased segment is obtained.

Benefits from foreign specimen cooling rate during an initial short to provide a stable temperature at load time (a hundred percent of the overclocked frequency component), lower power consumption and more importantly it is a very low cost.

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