

**IMPORTANT NOTE TO FUTURE P35-DS3L ( and P35 DS3x /DS4x and other P35 chipset based) OWNERS:**  
 If you are planing on getting RAM natively higher than DDR2 800 be aware that there will be compatibility issues. Many users reports and my personal testing has shown that there is a very good chance you will run in to issues with RAM higher than DDR2 800, such as DDR2 1066. I recommend you get quality DDR2 800 RAM and run them at 1:1 ratio or overclock the RAM. This issue dose not apply to DDR2 800 RAM that has been overclocked.

**Note to EP35-DS3L owners:** To "Disable" DES all you have to do is to not install DES program.  
 Special thanks to **knotknut** for his information.

[Link 1](#)  
[Link 2](#)

**Disclaimer:** I (or any one else on THF) is not responsible for damage to equipment due to incorrect overclocking/excessive overclocking,etc. Do overclocking at your own risk. Due to the nature of the manufacturing processes for CPU,etc your results might not be exact as others.

**Robust Graphic Booster**  
**CPU Clock Ratio** [10 X]  
**CPU Frequency** 3.2Ghz (320 x 10)  
**CPU Host Clock Control** [Enabled]  
**CPU Host Frequency (Mhz)** [320]  
**PCI Express Frequency (Mhz)** [100]  
**C.I.A.2** [Disabled]  
**Performance Enhance** [Standard]  
**System Memory Multiplier (SPD)**  
**Memory Frequency (Mhz)** 667 640  
**System Voltage Control**  
**DDR2 OverVoltage Control** [Manual]  
**PCI-E OverVoltage Control** [+0.2V]  
**FSB OverVoltage Control** [Normal]  
**(G)MCH OverVoltage Control** [+0.2V]  
**CPU Voltage Control** [Normal]  
**Normal CPU Vcore** 1.46250V 1.32500V

**Annotations:**  
 - This is the FSB, change this number to overclock.  
 - These settings must be set exactly as shown for stability and safety. Experienced users who are overclocking their RAM may disregard SPD setting here.  
 - This is the RATED RAM speed, do not go beyond this speed. Disregard if overclocking the RAM.  
 - This is RAM voltage, set this to manufacture recommended setting. (Default voltage is 1.8v). [eg. 2.1v = 0.3 + 1.8]  
 - Increase these settings for high FSB and/or stability.  
 - This is the CPU Voltage, For 45nm do not go above 1.4v; for 65nm do not go above 1.5v.  
 - This is CPU VID  
 - This is the CPU multiplier, Set this to highest possible to reduce FSB strain. Experienced users may disregard this note.

**Additional Notes:**  
 - This is the CURRENT RAM speed. Do not let this number exceed the RATED RAM speed. Experienced overclockers who are overclocking their RAM may disregard this note.

**BIOS OPTIONS IN DETAIL:**

*Note: These settings are very smiler/ same on all Gigabyte Motherboards.  
 Note: Users have reported that to successfully use 400Mhz FSB you must have F8b BIOS(For P35-DS3L) and F5 (For EP35-DS3L installed*

**R.G.B.:** Helps to enhance the performance of the GPU and VRAM. "Auto" allow the BIOS to automatically set the R.G.B. mode based on system configurations. This Option must be set to "Auto" for successful overclock.

**CPU Clock Ratio:** This is the CPU Multiplier. The lowest it can reach is 6x (most of the time) and the highest is dependent on the CPU. I recommend that you set this to the highest possible due to the fact that it puts fewer limits on the FSB (i.e. Less likely to hit an FSB wall etc.). But, there are cases in which it should or could be lowered.

**CPU Host Clock Control:** This option is "Disabled" by default. You MUST change this to "Enabled" in order to overclock the CPU.

**CPU Host Frequency (Mhz):** This is the FSB. Increase this value by 50-70Mhz over your Stock FSB during your first attempt.

For an 800 MHz FSB this is set to 200 MHz.  
 For a 1066 MHz FSB this is set to 266 MHz.  
 For a 1333 MHz FSB this is set to 333 MHz.  
 You can also enter any other value like 300 (1200FSB).

Change this item to reach the desired speed. This multiplied by the CPU multiplier gives the clock speed. I recommend that you change this by 50-100Mhz during the first few test phases to narrow down the stable overclock. Then after you reach the **Maximum Clock speed** (the point at which Prime95 fail in less than 5 hours) **decrease the FSB** by 20-50Mhz or **increase the CPU core voltage**.

*Note: Users have reported that to successfully use 400Mhz FSB you must have F8b BIOS installed*

**CPU Frequency:** This is the speed after any changes in the FSB and/or Multiplier.  
 This is equal to:

$$\text{Multiplier} * \text{FSB} = \text{CPU Frequency (CPU Speed)}$$

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Example:
10*300=3000Mhz
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**PCI Express Frequency (Mhz):** This is the PCIe frequency for the PCIe slots. Keep this at **100Mhz** or **"Auto"** .

**C.I.A.2:** CPU Intelligent Accelerator 2 (C.I.A.2) is a system designed to automatically adjust the CPU Clock speed by a given percentage. This option is **"Disabled"** by default. **It must be set to "Disabled" in order to successfully overclock the CPU** .

**Performance Enhance:** Must be set to **"Standard"** for a successful overclock.

**System Memory Multiplier (SPD):** This is the RAM SPD. Change this item so that the **"Memory Frequency"** shown below the SPD is not exceeded. It is OK to be under the **"Memory Frequency"** shown.

**Memory Frequency (Mhz):** The first RAM value listed (I will call this the "Rated RAM Speed" to make life easier) (to the left ) is the normal speed of the RAM being used; the second (to the right) is the memory frequency that is automatically adjusted according to the **"CPU Host Frequency (Mhz)"** and **"System Memory Multiplier"** settings. I would strongly suggest you decrease the SPD to stay at or below the "Rated RAM Speed". If your RAM is overclockable (i.e. RAM like the Crucial Ballistix) you should still set the SPD to the "Rated RAM Speed" as it would be one less variable in a CPU overclocking failure until you find the best stable overclock. **I recommend that you DO NOT overclock the RAM until you reach a stable CPU speed.**

**System Voltage Control:** Determines whether to manually set the system voltages (i.e. CPU core voltage, RAM voltage, PCIe voltage, etc). **"Auto"** lets BIOS automatically set the system voltages as required. I recommend that you set this to "Auto" only if your overclock is small like 10-11%. Set this to **"Disable"** if your overclock is high (i.e. 400+Mhz CPU speed increase). Also set this to **"Disable"** if you need to change RAM voltages, this is specially true for most high performance RAM like the Crucial Ballistix and Corsair XMS2, etc. **If your RAM is higher than 1.8v you must set this to "Disabled"** . \*\*\* (see near end of this section)

**DDR2 OverVoltage Control:** This is the RAM voltage. Increase this by +0.1v increments to reach the voltage specified by the ram manufacture. The standard voltage is 1.8v. So if your voltage is rated as 2.2v increase this to +0.4v since 1.8 + 0.4 = 2.2.

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Rated RAM voltage - 1.8 = The needed voltage increase

Example:
2.2 -1.8 = 0.4
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**PCI-E OverVoltage Control:** Allows you to set PCIe voltage. There should be no need to change this value for 98% of the overclockers.

**FSB OverVoltage Control:** Allows you to increase the FSB voltage. Increase this to reach stability under high FSB (i.e. 310Mhz+).

**(G)MCH OverVoltage Control:** This is the Northbridge voltage. Most overclockers will not need to change this setting. Change this to increase stability under certain FSBs (i.e. 420Mhz+). **Note that an increase in this setting WILL produce increase motherboard heat output.** A Northbridge cooler is recommended for most P35/X38 motherboards even if you are not changing the MCH voltage. Gigabyte motherboards with out Ultra Cool should have a small Northbridge fan ( I noticed a 8C drop in my motherboard temperatures once I installed a 40mm fan on the heat sink on my P35-DS3L.).

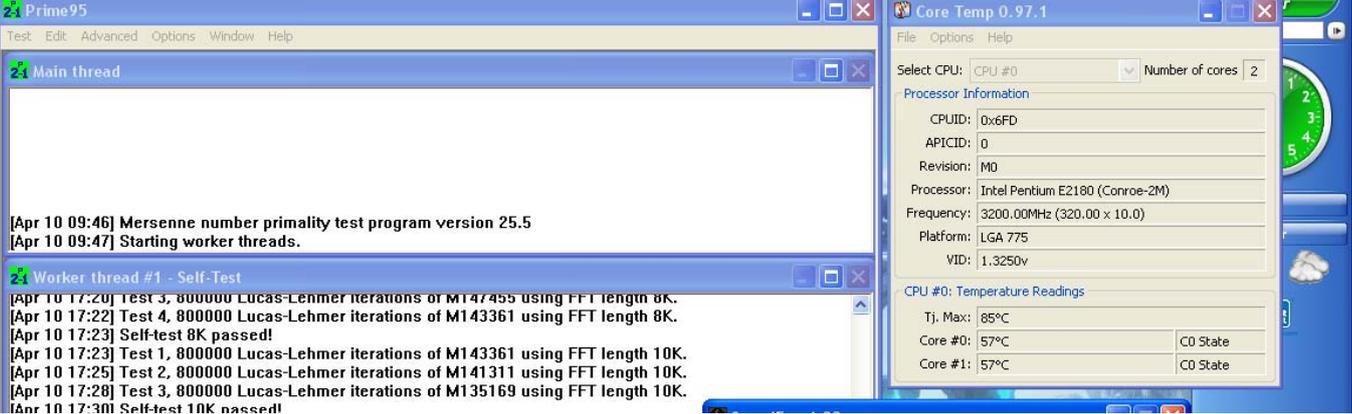
**CPU Voltage Control:** Allows you to set the CPU voltage. Increase the voltage little by little until you reach stability at a given CPU speed\*. **Increasing this setting WILL cause an increase in CPU temperatures, so therefore a good CPU cooler is highly recommended. You should also monitor your temperatures through software like CoreTemp. DO NOT LET CPU TEMPERATURES EXCEED 65C.** If your temperatures exceed 65C you are still safe but long term operation will not be advisable. **You should NEVER let the CPU reach thermal threshold (Tjunction). This is the point where the CPU automatically decreases the Multiplier to 6x, even if SpeedStep is disabled.**

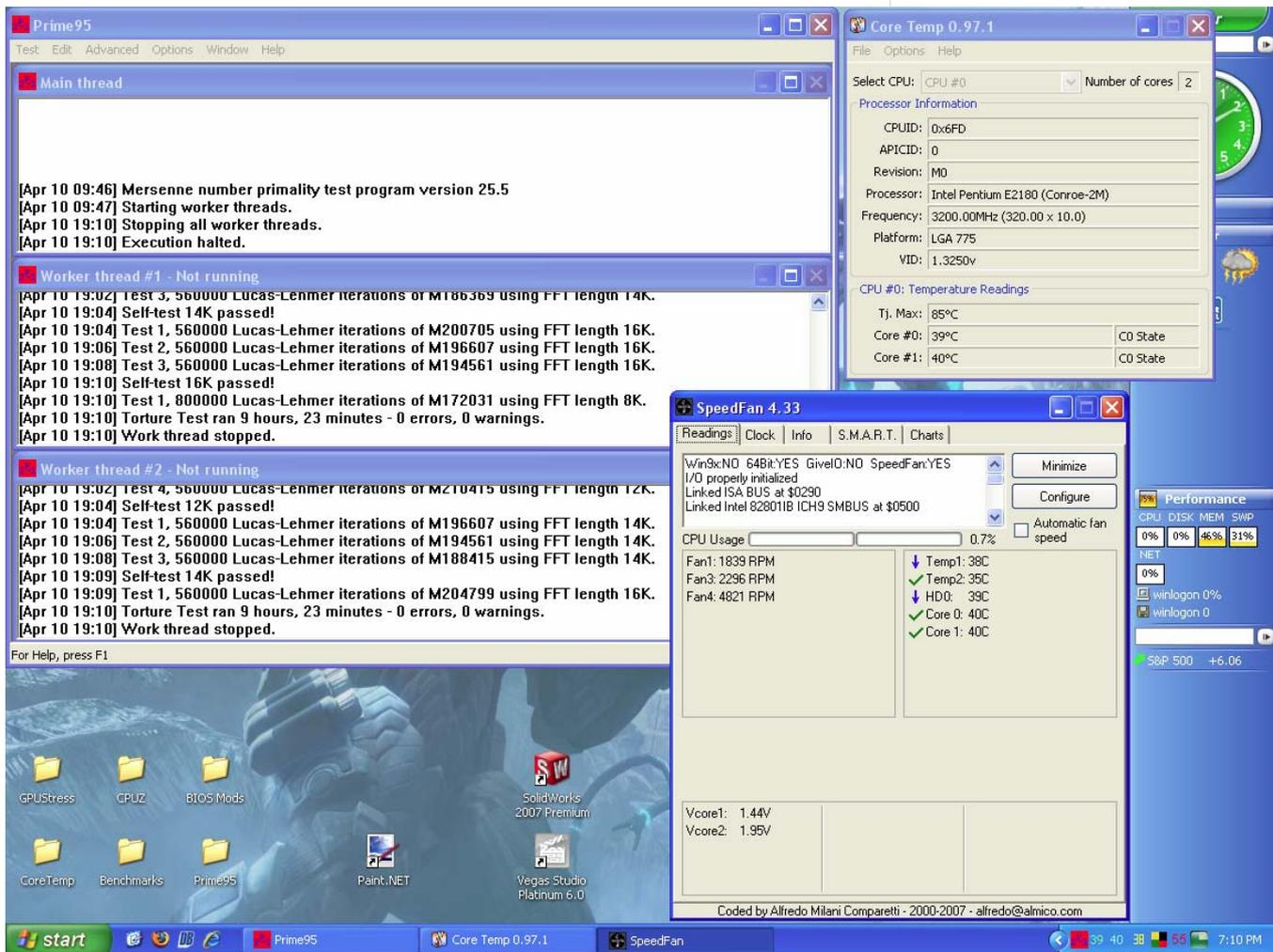
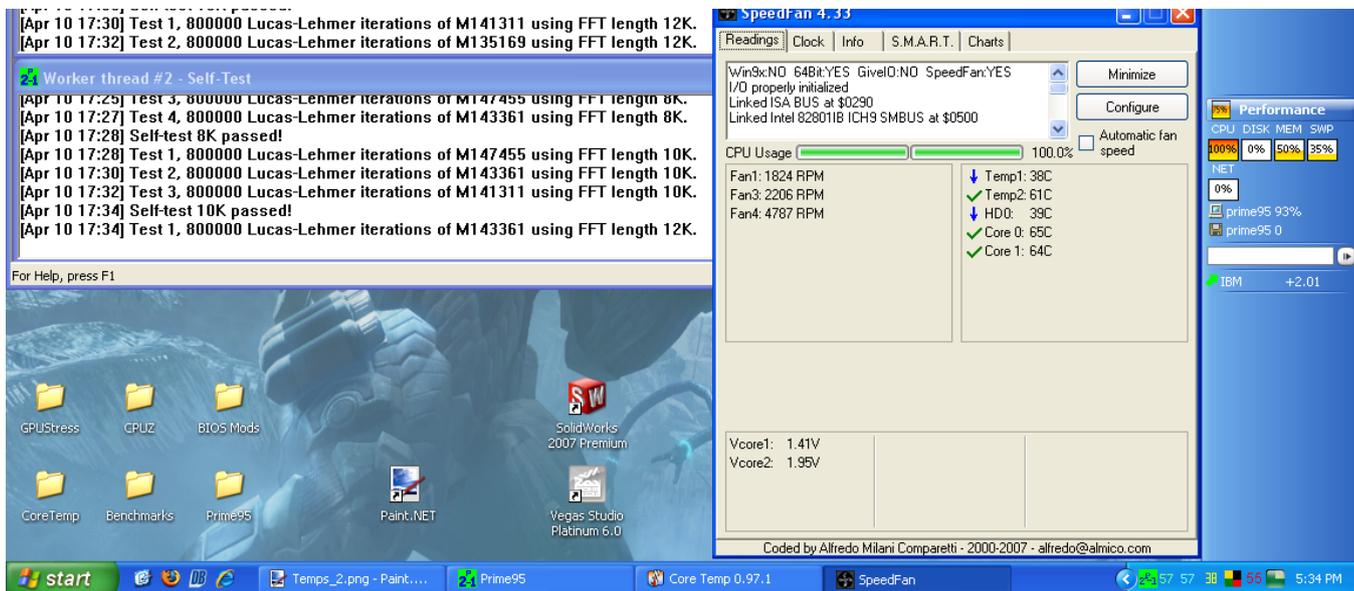
**Normal CPU Vcore:** This is the standard CPU voltage at stock settings.

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\*\*\* Some users have reported that decreasing the CPU voltage will allow an increase in the overclock/stability. This is due to the fact that less voltage means less heat therefore more stable overclock. This is mainly true for most of the E6xxx CPUs and E8xxx.  
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**++Go with the SpeedFan temps. Those temps were calibrated according to the Core 2 Quad and Duo Temperature Guide by CompuTronix ++**

The CPU on that motherboard is a E2180. The CPU has been stress tested with Prime95.





**CHANGING THE tRD VALUE**

**Note:** To gain access to these settings press "Ctrl"+ "F1" in the main screen. tRD value is listed as "Static tRead Value". It is recommended to have F5 BIOS or later.

One of the most important and often overlooked settings is the **MCH read delay** (tRD). Without going into too much detail I will say that, similar to memory timings, the lower this value is the better your system will perform. However, setting this too low will compromise system stability, and if you go REALLY low your system will fail to POST.

This review from AnandTech does an excellent job explaining this critical setting. I recommend starting at [page 4](#), but the quick and dirty can be found on [page 9](#).

Setting tRD on the DS3L can be a bit tricky. The "Performance Enhance" setting adjusts it as follows:  
Standard tRD = 11

Standard\_\_tRD=11  
Turbo\_\_tRD=6  
Extreme\_\_I have never been able to POST at this setting, so I don't know

On my system I am able to boot into Windows with Turbo, but Prime fails after ~2 seconds. Backing off to Standard will make things nice and stable, but the performance hit is noticeable. So how do we go about fine tuning the tRD on this board?

It's easy really actually. The DS3L refers to tRD as "Static tRead Value." Manually setting this will override the default "Performance Enhance" value. Weird I know, but that's it. Setting this to 8 allows my system to be completely stable at a FSB of 400MHz while yielding a nice performance boost over the default "Standard" setting of tRD=11.

(by: **homerdog**)

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Please post your settings, OCing success, BIOS settings image,etc. This would help people with smiler set ups to narrow down voltage ranges,etc.