

# PRINCO DDR3-1800 user guide and testing for ASUS M4A88TD-V Motherboard

AMD 965 3.40G



## Part I : Standard test

*It's the easiest way to enjoy overclock benefit by using PRINCO DDR3-1800 DIMM board*

How to use?

0. Clear BIOS to mainboard initial setting
1. Enter BIOS setup and [Ai Tweaker] menu
2. Enter [Ai Overclock Tuner] item and select [Manual]
3. Select [CPU/HT Reference Clock (MHz)] item , and increase to higher Base clock rate (ex:225). Then select [DRAM Frequency] item , and set the DDR3 memory to higher clock rate (ex:1800MHz). Don't forget setting [CPU Ratio] item to suitable ratio (ex:15.0)

*( In this case we only focus on memory over clocking, not CPU )*

4. Select[DRAM Voltage] item , and set the value to [1.60500]

Step 1 : Select " Ai Tweaker "

Step 2 : CPU Overclocking

Set [ Manual ]

Step 3 : CPU/HT Reference Clock (MHz)

Set [ 225 ]

Step 4 : DRAM Frequency

Set [ 1800MHz ]

Step 5 : CPU Ratio

Set [ 15.0 ]

Step 6 : DRAM Voltage

Set [ 1.60500 ]

M4A88TD-U EVO/USB3 BIOS Setup Version 1404

Main **Ai Tweaker** Advanced Power Boot Tools Exit

Step 1

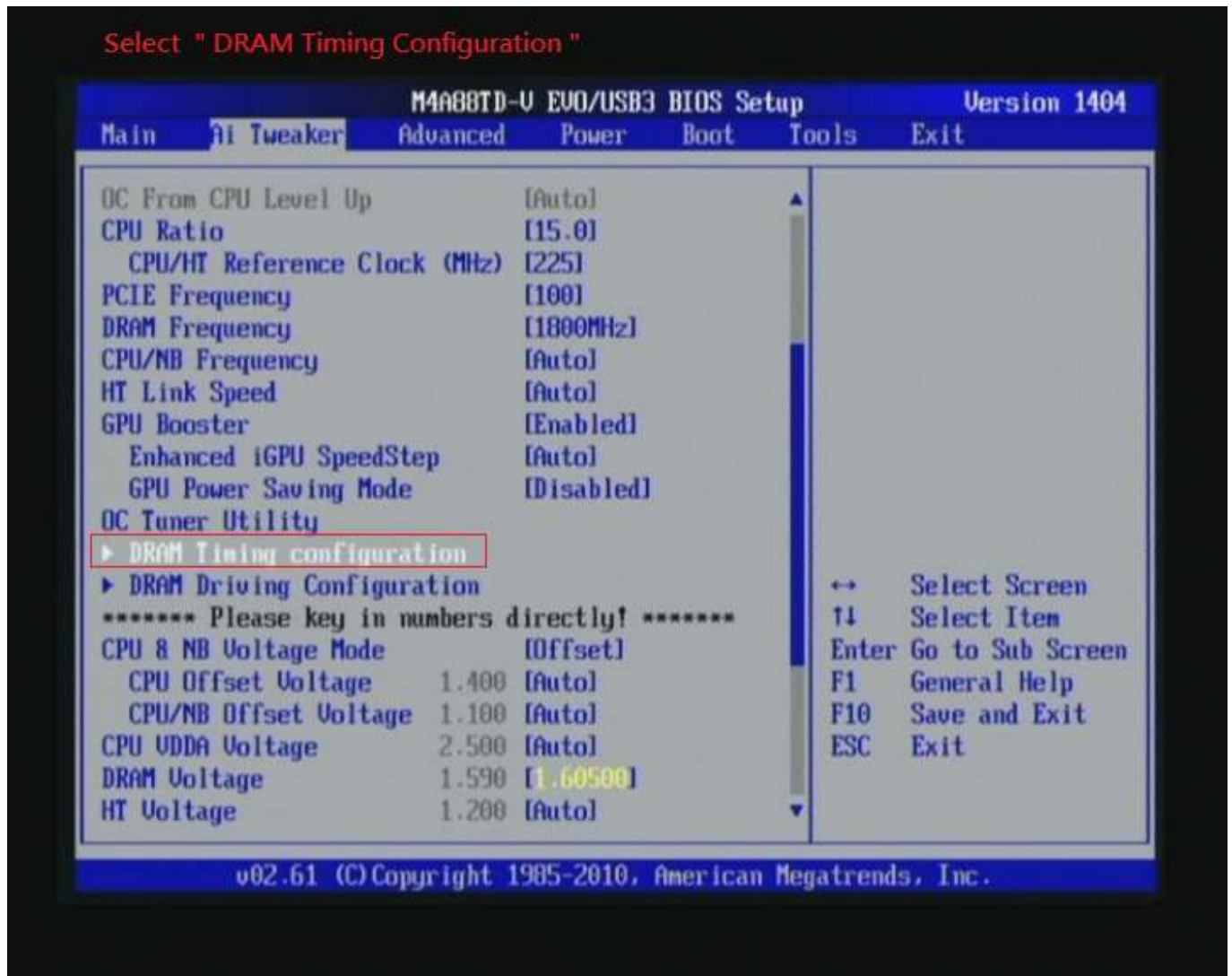
CPU OverClocking	[Manual]	Step 2
OC From CPU Level Up	[Auto]	
CPU Ratio	[15.0]	Step 5
CPU/HT Reference Clock (MHz)	[225]	Step 3
PCIE Frequency	[100]	
DRAM Frequency	[1800MHz]	Step 4
CPU/NB Frequency	[Auto]	
HT Link Speed	[Auto]	
GPU Booster	[Enabled]	
Enhanced iGPU SpeedStep	[Auto]	
GPU Power Saving Mode	[Disabled]	
OC Tuner Utility		
▶ DRAM Timing configuration		
▶ DRAM Driving Configuration		
***** Please key in numbers directly! *****		
CPU & NB Voltage Mode	[Offset]	
CPU Offset Voltage	1.400 [Auto]	
CPU/NB Offset Voltage	1.100 [Auto]	
CPU UDDA Voltage	2.500 [Auto]	
DRAM Voltage	1.590 [1.60500]	Step 6

Min = 1.20000U  
Max = 2.44500U(\*)  
Interval = 0.01500U  
Standard = 1.50000U  
+/- : Raise/Reduce

↔ Select Screen  
↑↓ Select Item  
F1 General Help  
F10 Save and Exit  
ESC Exit

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## 5. Enter [DRAM Timing Configuration] item



6. set [DRAM CAS# Latency] item to [8 CLK]

set [DRAM RAS# to CAS# Delay] item to [9 CLK]

set [DRAM RAS# PRE Time] item to [8 CLK]

set [DRAM RAS# ACT Time] item to [27 CLK]

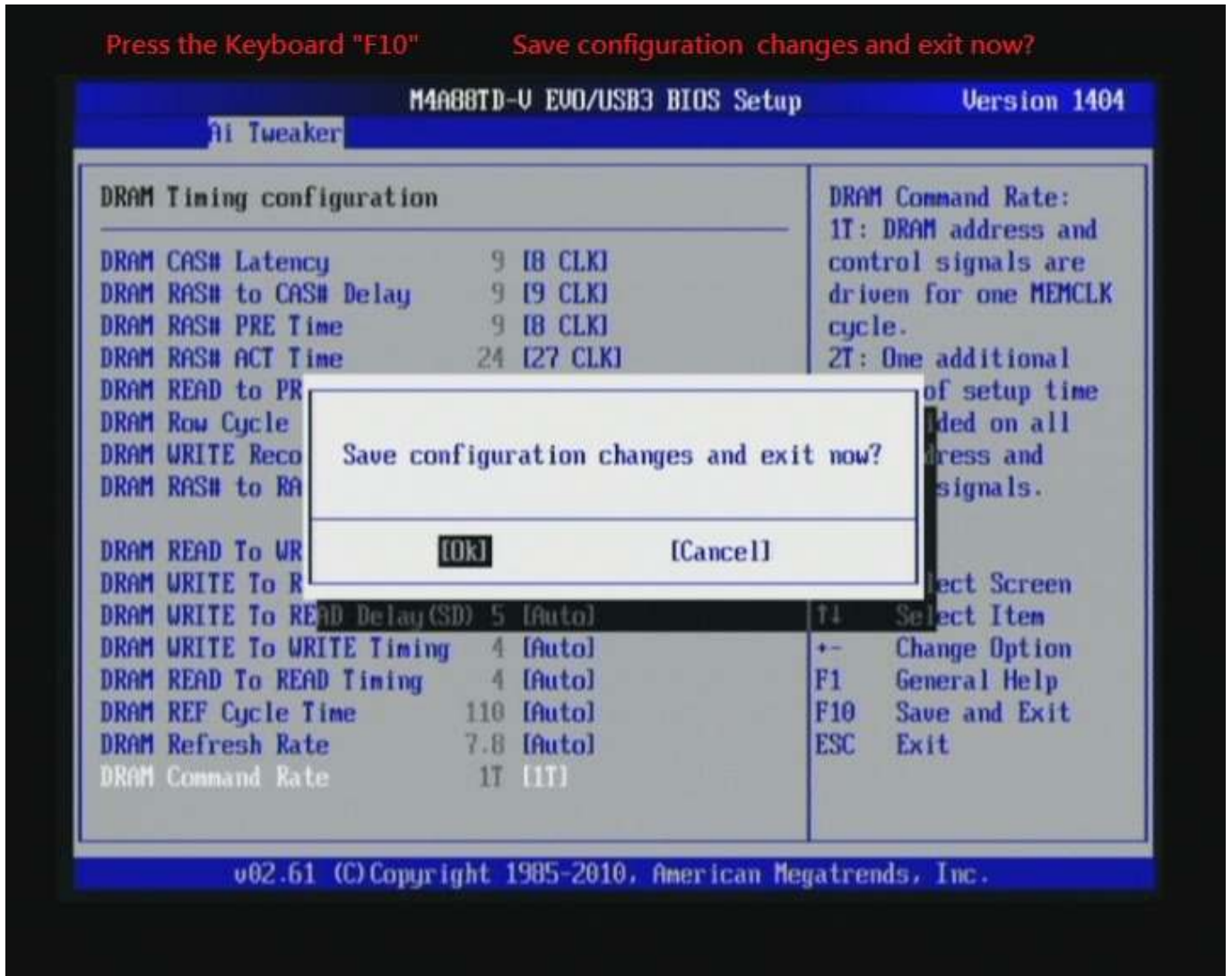
set [DRAM Command Rate] item to [1T]

then return to previous to [Ai Overclock Tuner] menu

Step 1 : DRAM CAS# Latency Set [ 8 CLK ]  
DRAM RAS# to CAS# Delay Set [ 9 CLK ]  
DRAM RAS# PRE Time Set [ 8 CLK ]  
DRAM RAS# ACT Time Set [ 27 CLK ]  
Step 2 : DRAM Command Rate Set [ 1T ]



## 7. Save BIOS changes [F10] and exit



# Test result?

In order to demonstrate the performance and stability of PRINCO DDR3-1800 DIMM board, We use the strictest stress testing, that is, multi-core MemTest in window 7.

(Data rate :  $900.0 \times 2 = 1800$ , timing : 8, 9, 8, 27, multi-core test => pass!)

The image displays a collage of software windows. On the left, four instances of MemTest86 are shown, all reporting 0 errors and 100% coverage. The top-right shows CPU-Z Processor tab for an AMD Phenom II X4 965. The middle-right shows CPU-Z Mainboard tab for an ASUS M4A88TD-V EVO/USB3. The bottom-right shows CPU-Z Memory tab with DDR3 4096 MB, 900.0 MHz, and various timings. On the bottom-left, Windows Task Manager shows 100% CPU usage and 3.74 GB of physical memory usage.

Instance	Coverage	Errors
1	103.5%	0
2	102.2%	0
3	103.4%	0
4	103.4%	0

Property	Value
Name	AMD Phenom II X4 965
Code Name	Deneb
Brand ID	14
Package	Socket AM3 (938)
Technology	45 nm
Core Voltage	1.368 V
Specification	AMD Phenom(tm) II X4 965 Processor
Family	F
Model	4
Stepping	3
Ext. Family	10
Ext. Model	4
Revision	RB-C3
Instructions	MMX(+), 3DNow!(+), SSE (1, 2, 3, 4A), x86-64, AMD-V

Property	Value
Manufacturer	ASUSTeK Computer INC.
Model	M4A88TD-V EVO/USB3
Chipset	AMD 880
Southbridge	AMD SB800
LPCIO	ITE IT872

Property	Value
Type	DDR3
Channels #	Dual
DC Mode	Unganged
NB Frequency	2250.1 MHz
Size	4096 MBytes

Property	Value
DRAM Frequency	900.0 MHz
FSB-DRAM	1:4
CAS# Latency (CL)	8.0 clocks
RAS# to CAS# Delay (tRCD)	9 clocks
RAS# Precharge (tRP)	8 clocks
Cycle Time (tRAS)	27 clocks
Bank Cycle Time (tRC)	40 clocks
Command Rate (CR)	1T
DRAM Idle Timer	
Total CAS# (tRDRAM)	
Row To Column (tRCD)	

Category	Usage
CPU 使用率	100 %
記憶體	3.74 GB

Category	Value
系統	8105
控制代碼	367
執行緒	34
處理程序	0.00:23:03
存留時間	4032 / 8188
認可 (MB)	

# Advanced Overclocking and Testing

## Part II : Heavy test

*If you want to know the potential of PRINCO DDR3-1800? Following are step-by-step howto.*

How to use?

0. Clear BIOS to mainboard initial setting
1. Enter BIOS setup and [Ai Tweaker] menu
2. Enter [Ai Overclock Tuner] item and select [Manual]
3. Select [CPU/HT Reference Clock (MHz)] item , and increase to higher Base clock rate (ex:243). Then select [DRAM Frequency] item , and set the DDR3 memory to higher clock rate (ex:1944MHz). Don't forget setting [CPU Ratio] item to suitable ratio (ex:14.0)

*( In this case we only focus on memory over clocking, not CPU )*

4. Select[DRAM Voltage] item , and set the value to [1.65000]



Step 1 : Select " Ai Tweaker "

Step 2 : CPU Overclocking

Set [ Manual ]

Step 3 : CPU/HT Reference Clock (MHz)

Set [ 243 ]

Step 4 : DRAM Frequency

Set [ 1944MHz ]

Step 5 : CPU Ratio

Set [ 14.0 ]

Step 6 : DRAM Voltage

Set [ 1.65000 ]

M4A88TD-U EVO/USB3 BIOS Setup Version 1404

Main **Ai Tweaker** Advanced Power Boot Tools Exit

Step 1

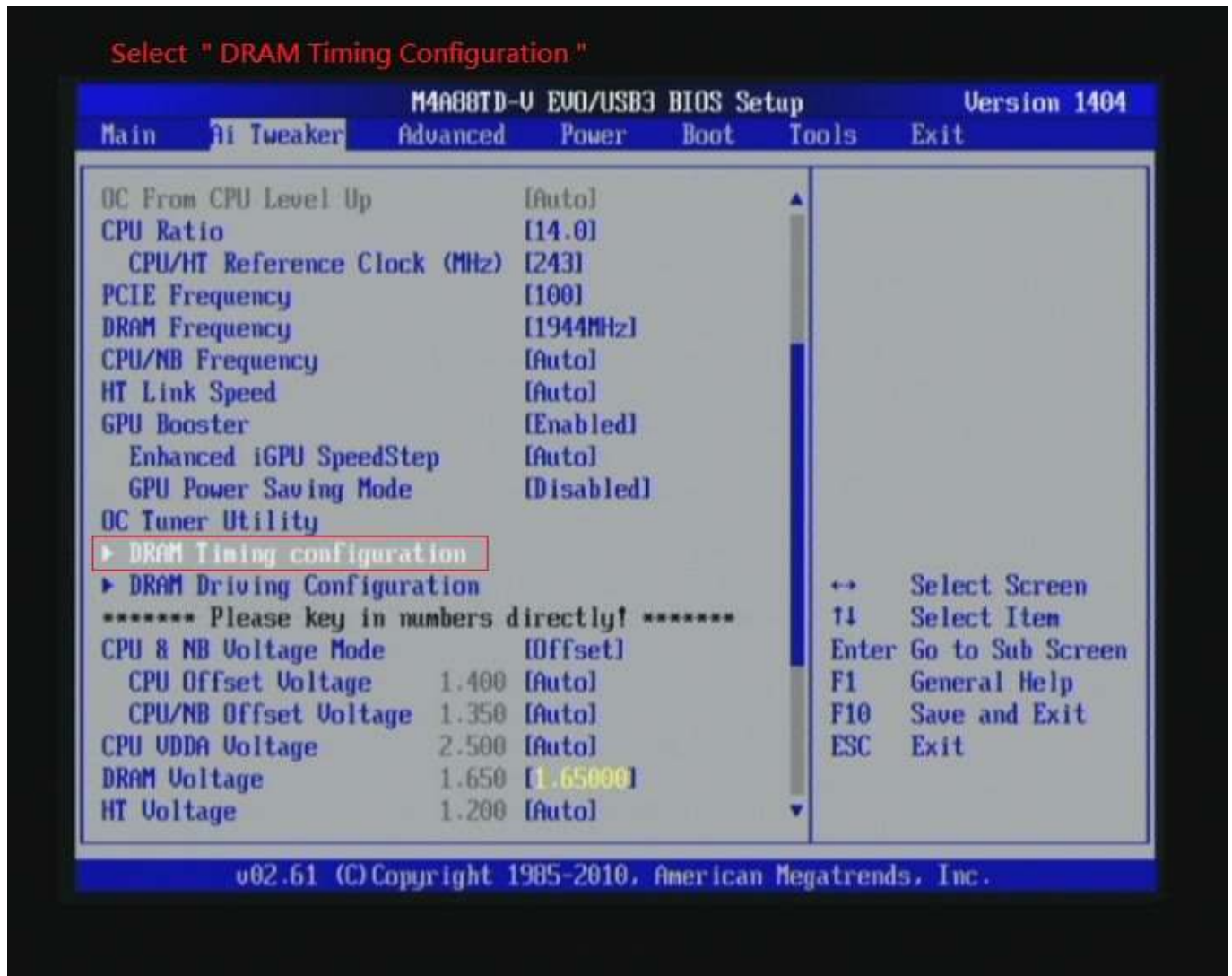
CPU OverClocking	[Manual]	Step 2
OC From CPU Level Up	[Auto]	
CPU Ratio	[14.0]	Step 5
CPU/HT Reference Clock (MHz)	[243]	Step 3
PCIE Frequency	[100]	
DRAM Frequency	[1944MHz]	Step 4
CPU/NB Frequency	[Auto]	
HT Link Speed	[Auto]	
GPU Booster	[Enabled]	
Enhanced iGPU SpeedStep	[Auto]	
GPU Power Saving Mode	[Disabled]	
OC Tuner Utility		
▶ DRAM Timing configuration		
▶ DRAM Driving Configuration		
***** Please key in numbers directly! *****		
CPU & NB Voltage Mode	[Offset]	
CPU Offset Voltage	1.400 [Auto]	
CPU/NB Offset Voltage	1.350 [Auto]	
CPU VDDA Voltage	2.500 [Auto]	
DRAM Voltage	1.650 [1.65000]	Step 6

Min = 1.20000U  
Max = 2.44500U(\*)  
Interval = 0.01500U  
Standard = 1.50000U  
+/- : Raise/Reduce

↔ Select Screen  
↑↓ Select Item  
F1 General Help  
F10 Save and Exit  
ESC Exit

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## 5. Enter [DRAM Timing Configuration] item



6. set [DRAM CAS# Latency] item to [9 CLK]

set [DRAM RAS# to CAS# Delay] item to [9 CLK]

set [DRAM RAS# PRE Time] item to [9 CLK]

set [DRAM RAS# ACT Time] item to [27 CLK]

set [DRAM Command Rate] item to [1T]

then return to previous to [Ai Overclock Tuner] menu

Step 1 : DRAM CAS# Latency Set [ 9 CLK]  
DRAM RAS# to CAS# Delay Set [ 9 CLK]  
DRAM RAS# PRE Time Set [ 9 CLK]  
DRAM RAS# ACT Time Set [ 27 CLK]  
Step 2 : DRAM Command Rate Set [ 1T]



## 7. Save BIOS changes [F10] and exit



# Test result?

We use the strictest stress testing, multi-core MemTest in window 7, to show you PRINCO DDR3-1800 potential.

(Data rate :  $972.0 \times 2 = 1944$ , timing : 9, 9, 9, 27, multi-core test => pass!)

Four MemTest86 windows are shown, each reporting 0 errors and high coverage. The first two windows show a test of 870 MB with 134.1% and 133.7% coverage. The last two windows show a test of 'All unused RAM' with 134.6% and 137.4% coverage.

CPU-Z window showing processor details for AMD Phenom II X4 965. The processor is identified as AMD Phenom(tm) II X4 965 Processor, Family F, Model 4, Stepping 3. It features MMX(+), 3DNow!(+), SSE (1, 2, 3, 4A), x86-64, and AMD-V instructions. The core speed is 3402.0 MHz, and the bus speed is 243.0 MHz.

CPU-Z window showing motherboard details for ASUSTeK Computer M4A88TD-V EVO/ motherboard. The manufacturer is ASUSTeK Computer, and the model is M4A88TD-V EVO/. The chipset is AMD, and the southbridge is AMD. The BIOS version is 1404, dated 07/21/2010.

CPU-Z window showing memory details for DDR3 4096 MB. The memory is DDR3, 4096 MBytes, Dual Channel, Unganged. The DRAM frequency is 972.0 MHz, and the FSB-DRAM ratio is 1:4. The CAS# latency is 9.0 clocks, and the command rate is 1T.

CPU-Z window showing memory slot selection and timing table. Slot #1 is selected with a DDR3 module of 2048 MB. The timing table shows a JEDEC #3 configuration with a frequency of 609 MHz, CAS# latency of 8.0, and a command rate of 1.50 V.

Windows Task Manager window showing system performance. CPU usage is 100%, and memory usage is 93%. The task manager also displays system information, including the operating system version and available resources.