

# PRINCO DDR3-1600 user guide and testing for DFI UTX58 T3eH8 Motherboard

CPU i7-930 2.80G



## Part I : Standard test

*It's the easiest way to enjoy overclock benefit by using PRINCO DDR3-1600 DIMM board*

How to use?

0. Clear BIOS to mainboard initial setting
1. Enter BIOS setup and [Genie BIOS Setting] menu

Select " Genie BIOS Setting "



2. Select [DRAM Frequency] item , and set the DDR3 memory to higher clock rate (ex:BCLK\*12 1596MHz). Then select [UnCore Frequency] item to (ex:BCLK\*24 3192MHz) Don't forget setting [CPU Non-Turbo Clock Ratio] item to suitable ratio (ex:21 X)

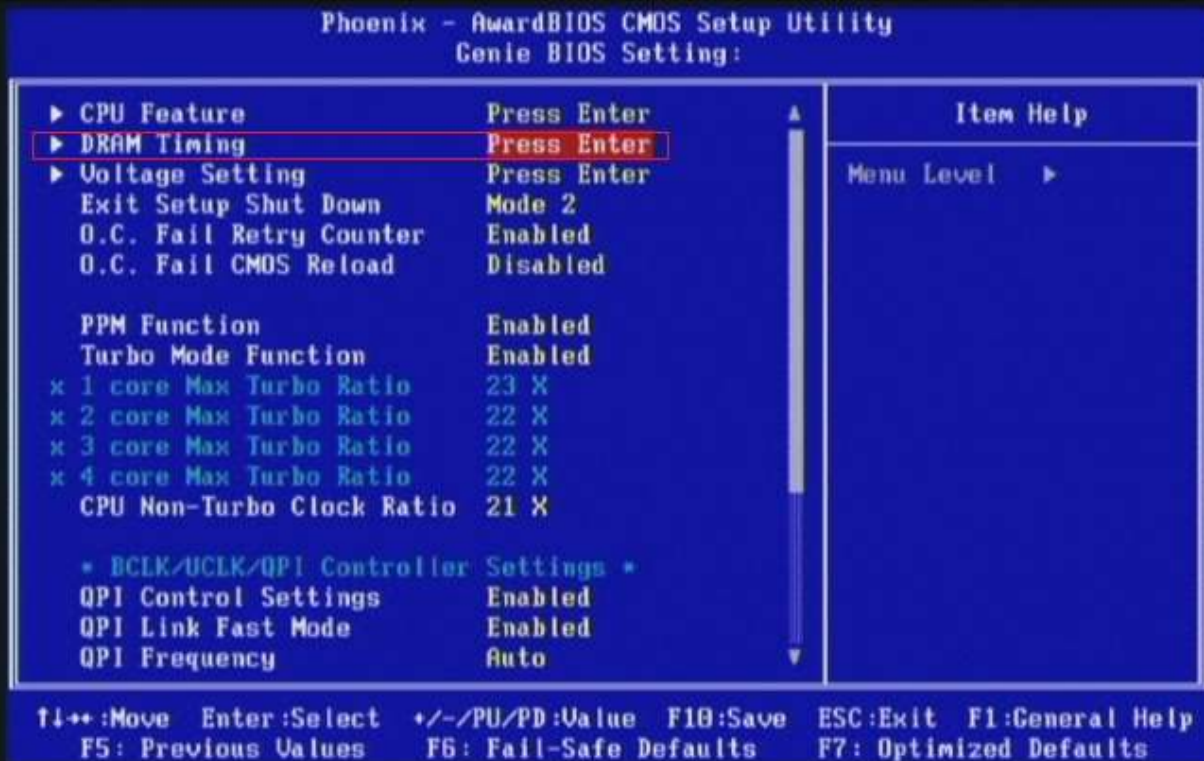
*( In this case we only focus on memory over clocking, not CPU )*

Step 1: DRAM Frequency Set [ BCLK\*12 1596MHz ]  
UnCore Frequency Set [ BCLK\*24 3192MHz ]  
Step 2: CPU Non-Turbo Clock Ratio Set [ 21 X ]



### 3. Enter [DRAM Timing] item

Select " DRAM Timing "



4. set [DRAM Command Rate] item to [1N]

set [DRAM Latency Time (tCL)] item to [7]

set [RAS# to CAS# Delay (tRCD)] item to [9]

set [Precharge delay (tRP)] item to [7]

set [RAS# Precharge (tRAS)] item to [24]

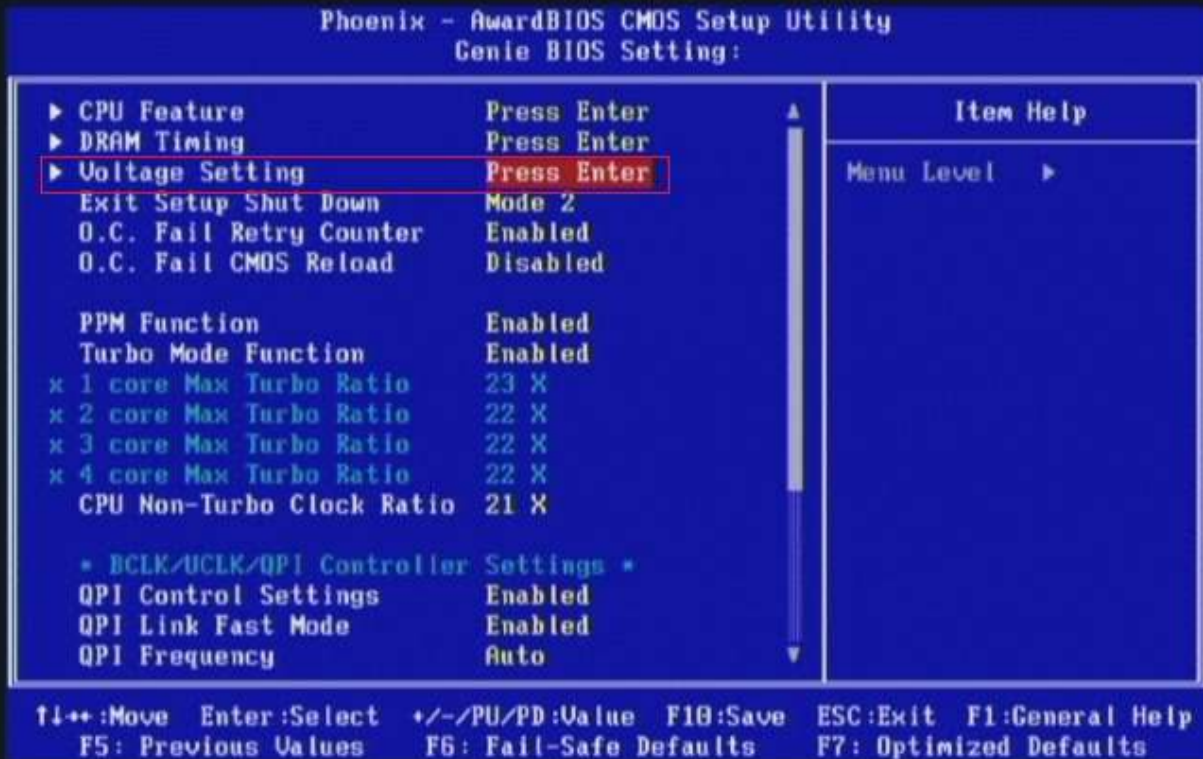
then return to previous to [Genie BIOS Setting] menu

DRAM Command Rate	Set [1N]
CAS Latency Time (tCL)	Set [7]
RAS# to CAS# Delay (tRCD)	Set [9]
Precharge delay (tRP)	Set [7]
RAS# Precharge (tRAS)	Set [24]



## 5. Enter [Voltage Setting] item

Select " Voltage Setting "



6. Select [DRAM Bus Voltage] item , and set the value to [1.605V].



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

Press the Keyboard "F10"

Save to CMOS and EXIT (Y/N)? Y





# Test result?

In order to demonstrate the performance and stability of PRINCO DDR3-1600 DIMM board, We use the strictest stress testing, that is, multi-core MemTest in window 7.

(Data rate :  $800.2 \times 2 = 1600$ , timing : 7, 9, 7, 24, multi-core test => pass!)

The image displays a collage of software windows. On the left, eight MemTest windows are arranged in a 4x2 grid. Each window shows a test configuration for 660 MB of RAM. The results for each test are as follows:

- Top-left: 159.2% Coverage, 0 Errors
- Top-right: 162.3% Coverage, 0 Errors
- Second row, left: 161.3% Coverage, 0 Errors
- Second row, right: 153.1% Coverage, 0 Errors
- Third row, left: 159.5% Coverage, 0 Errors
- Third row, right: 154.5% Coverage, 0 Errors
- Bottom row, left: 158.9% Coverage, 0 Errors
- Bottom row, right: 127.0% Coverage, 0 Errors

In the bottom-right MemTest window, the RAM size is set to "All unused RAM".

On the right side, there are three CPU-Z windows. The top window shows the processor details for an Intel Core i7 930:

- Processor Name: Intel Core i7 930
- Code Name: Bloomfield
- Package: Socket 1366 LGA
- Technology: 45 nm
- Core Voltage: 1.248 V
- Specification: Intel(R) Core(TM) i7 CPU 930 @ 2.80GHz
- Clocks (Core #0): Core Speed 2934.1 MHz, Multiplier x 22.0, Bus Speed 133.4 MHz, QPI Link 2400.6 MHz
- Cache: L1 Data 4 x 32 KBytes 8-way, L1 Inst. 4 x 32 KBytes 4-way, Level 2 4 x 256 KBytes 8-way, Level 3 8 MBytes 16-way
- Selection: Processor #1, Cores 4, Threads 8

The middle CPU-Z window shows memory details:

- General: Type DDR3, Size 6144 MBytes, Channels # Triple, DC Mode, NB Frequency 3200.7 MHz
- Timings: DRAM Frequency 800.2 MHz, FSB:DRAM 2:12, CAS# Latency (CL) 7.0 clocks, RAS# to CAS# Delay (tRCD) 9 clocks, RAS# Precharge (tRP) 7 clocks, Cycle Time (tRAS) 24 clocks, Row Refresh Cycle Time (tRFC) 88 clocks, Command Rate (CR) 1T, DRAM Idle Timer, Total CAS# (tRDRAM), Row To Column (tRCD)

The bottom CPU-Z window shows memory slot selection and a timings table:

- Memory Slot Selection: Slot #1, DDR3, Module Size 2048 MBytes, Max Bandwidth PC3-10700 (667 MHz), Manufacturer, Part Number PRINCO-DR3-16000, Serial Number
- Timings Table:

	JEDEC #2	JEDEC #1
Frequency	533 MHz	609 MHz
CAS# Latency	7.0	8.0
RAS# to CAS#	7	8
RAS# Precharge	7	8
tRAS	20	22
tRC	27	30
Command Rate		
Voltage	1.50 V	1.50 V

At the bottom, a Windows Task Manager window is visible, showing CPU usage at 100% and memory usage at 5.69 GB.

# Advanced Overclocking and Testing

## Part II : Heavy test

*If you want to know the potential of PRINCO DDR3-1600? Following are step-by-step howto.*

How to use?

0. Clear BIOS to mainboard initial setting
1. Enter BIOS setup and [Genie BIOS Setting] menu

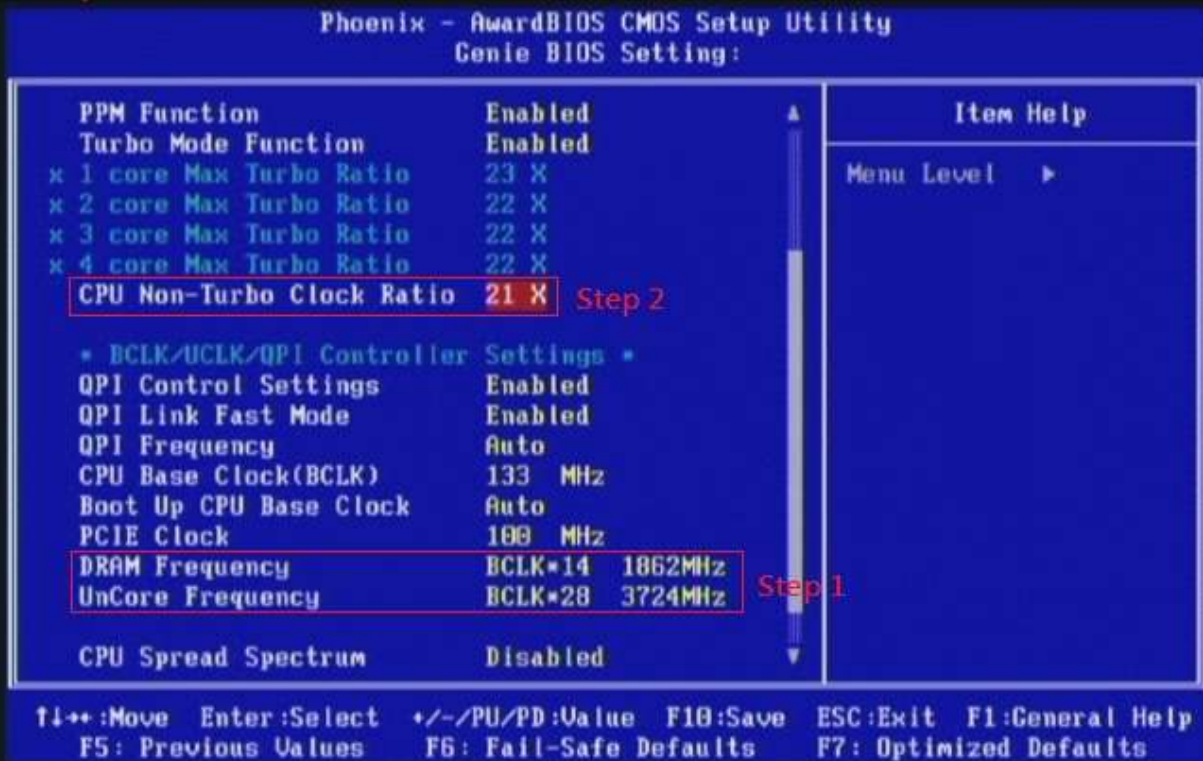
Select " Genie BIOS Setting "



2. Select [DRAM Frequency] item , and set the DDR3 memory to higher clock rate (ex:BCLK\*14 1862MHz). Then select [UnCore Frequency] item to (ex:BCLK\*24 3724MHz) Don't forget setting [CPU Non-Turbo Clock Ratio] item to suitable ratio (ex:21 X)

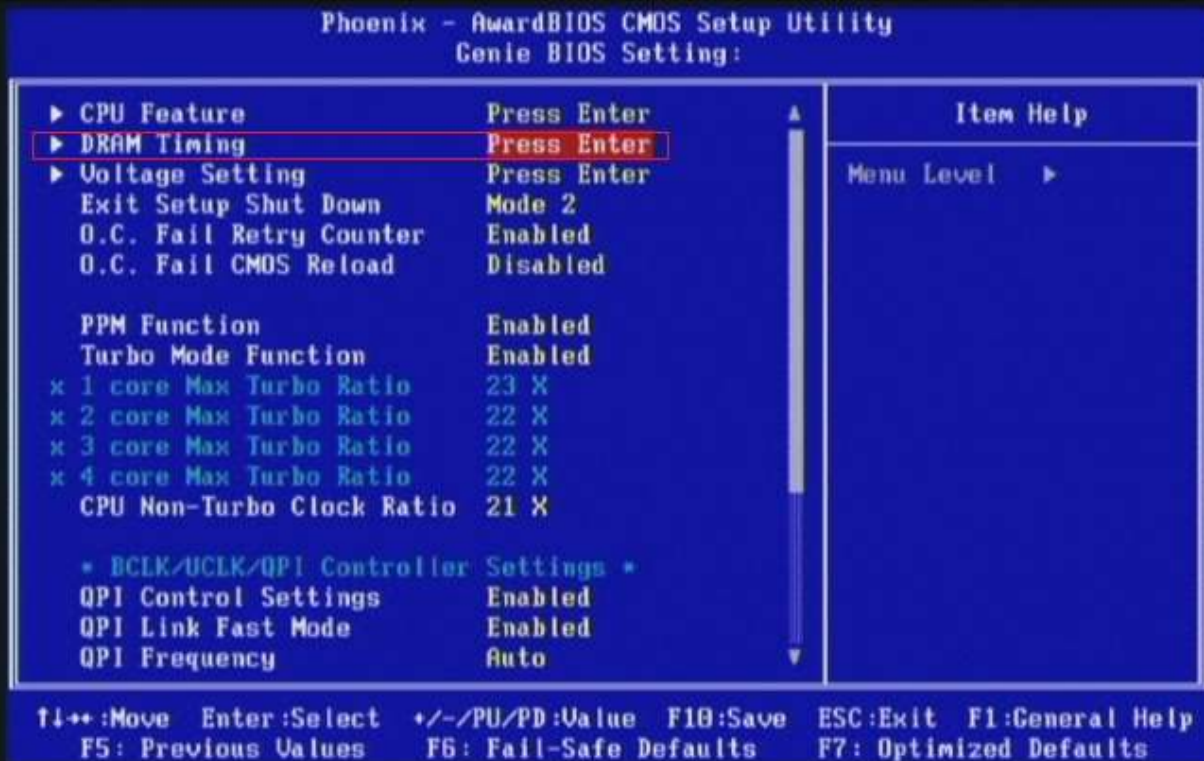
*( In this case we only focus on memory over clocking, not CPU )*

Step 1: DRAM Frequency Set [ BCLK\*15 1862MHz ]  
UnCore Frequency Set [ BCLK\*28 3724MHz ]  
Step 2: CPU Non-Turbo Clock Ratio Set [ 21 X ]



### 3. Enter [DRAM Timing] item

Select " DRAM Timing "



4. set [DRAM Command Rate] item to [1N]

set [DRAM Latency Time (tCL)] item to [9]

set [RAS# to CAS# Delay (tRCD)] item to [9]

set [Precharge delay (tRP)] item to [9]

set [RAS# Precharge (tRAS)] item to [27]

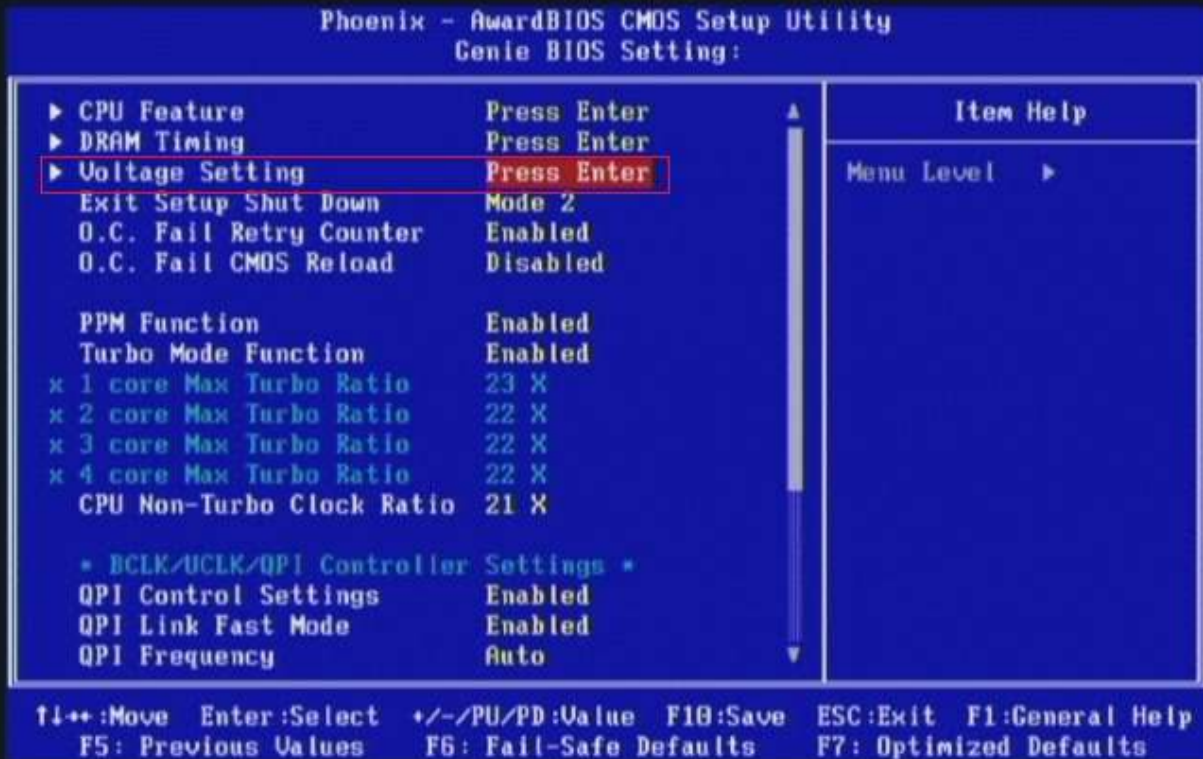
then return to previous to [Genie BIOS Setting] menu

DRAM Command Rate	Set [1N]
CAS Latency Time (tCL)	Set [9]
RAS# to CAS# Delay (tRCD)	Set [9]
Precharge delay (tRP)	Set [9]
RAS# Precharge (tRAS)	Set [27]



## 5. Enter [Voltage Setting] item

Select " Voltage Setting "



6. Select [DRAM Bus Voltage] item , and set the value to [1.635V].

Select[CPU VTT Voltage] item , and set the value to [1.40V]

Step 1 : DRAM Bus Voltage

Set [1.605V]

Step 2 : CPU VTT Voltage

Set [1.40V]



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

Press the Keyboard "F10"

Save to CMOS and EXIT (Y/N)? Y





# Test result?

We use the strictest stress testing, multi-core MemTest in window 7, to show you PRINCO DDR3-1600 potential.

(Data rate :  $933.6 \times 2 = 1867$ , timing : 9, 9, 9, 27, multi-core test => pass!)

The image shows a 4x2 grid of MemTest86 application windows. Each window displays the test configuration (680 MB RAM) and the results. The results for each window are as follows:

- Row 1: 155.4% Coverage, 0 Errors
- Row 2: 158.9% Coverage, 0 Errors
- Row 3: 155.5% Coverage, 0 Errors
- Row 4: 156.5% Coverage, 0 Errors
- Row 5: 156.2% Coverage, 0 Errors
- Row 6: 154.9% Coverage, 0 Errors
- Row 7: 157.1% Coverage, 0 Errors
- Row 8: 196.8% Coverage, 0 Errors

**CPU-Z** Version 1.56 - Mainboard tab

**Processor**

- Name: Intel Core i7 930
- Code Name: Bloomfield
- Package: Socket 1366 LGA
- Technology: 45 nm
- Core Voltage: 0.944 V
- Specification: Intel(R) Core(TM) i7 CPU 930 @ 2.80GHz
- Family: 6, Model: A, Stepping: 5
- Ext. Family: 6, Ext. Model: 1A, Revision: D0
- Instructions: MMX, SSE (1, 2, 3, 3S, 4.1, 4.2), EM64T, VT-x

**Clocks (Core #0)**

- Core Speed: 1600.3 MHz
- Multiplier: x 12.0
- Bus Speed: 133.4 MHz
- QPI Link: 2400.4 MHz

**Cache**

- L1 Data: 4 x 32 KBytes, 8-way
- L1 Inst: 4 x 32 KBytes, 4-way
- Level 2: 4 x 256 KBytes, 8-way
- Level 3: 8 MBytes, 16-way

Selection: Processor #1 | Cores: 4 | Threads: 8

**CPU-Z** Version 1.56 - Mainboard tab

**Motherboard**

- Manufacturer: DFI Inc.
- Model: DFI LP UT X58
- Chipset: Intel
- Southbridge: Intel
- LPICIO: ITE

**BIOS**

- Brand: Phoenix Technologies
- Version: 6.00 PG
- Date: 06/19/2009

**Graphic Interface**

- Version: [blank]
- Link Width: x16
- Side Band: [blank]

**CPU-Z** Version 1.56 - Memory tab

**General**

- Type: DDR3
- Size: 6144 MBytes
- Channels #: Triple
- DC Mode: [blank]
- NB Frequency: 3734.2 MHz

**Timings**

- DRAM Frequency: 933.6 MHz
- FSB:DRAM: 2:14
- CAS# Latency (CL): 9.0 clocks
- RAS# to CAS# Delay (tRCD): 9 clocks
- RAS# Precharge (tRP): 9 clocks
- Cycle Time (tRAS): 27 clocks
- Row Refresh Cycle Time (tRFC): 88 clocks
- Command Rate (CR): 1T
- DRAM Idle Timer: [blank]
- Total CAS# (tRDRAM): [blank]
- Row To Column (tRCD): [blank]

**CPU-Z** Version 1.56 - Memory tab

**Memory Slot Selection**

- Slot #1: DDR3
- Module Size: 2048 MB
- Max Bandwidth: PC3-10700 (6)
- Manufacturer: [blank]
- Part Number: PRINCO-DR3-
- Serial Number: [blank]

**Timings Table**

	JEDEC #2
Frequency	533 MHz
CAS# Latency	7.0
RAS# to CAS#	7
RAS# Precharge	7
tRAS	20
tRC	27
Command Rate	[blank]
Voltage	1.50 V

**Windows 工作管理員** - Performance tab

檔案(F) 選項(O) 檢視(V) 說明(H)

應用程式 | 處理程序 | 服務 | 效能 | 網路功能 | 使用者

**CPU 使用率**

- 100%

**記憶體**

- 5.64 GB

**CPU 使用率記錄**

**實體記憶體使用記錄**