

PRINCO DDR3-1800 user guide and testing for GA-P55-UD3L Motherboard

CPU i5-760 2.80G



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 [MB Intelligent Tweaker(M.I.T.)] menu

Select "MB Intelligent Tweaker (M. I. T.)"



2. Enter [Advance Memory Setting] item

Select "Advanced Memory Settings"

```
CMOS Setup Utility - Copyright (C) 1984-2010 Award Software
MB Intelligent Tweaker(M.I.T.)
```

		Item Help
▶ M.I.T Current Status	[Press Enter]	
▶ Advanced Frequency Settings	[Press Enter]	
▶ Advanced Memory Settings	[Press Enter]	Menu Level ▶
▶ Advanced Voltage Settings	[Press Enter]	Configure DRAM Features
▶ Miscellaneous Settings	[Press Enter]	

BIOS Version	FH
BCLK	133.27 MHz
CPU Frequency	2932.03 MHz
Memory Frequency	1332.75 MHz
Total Memory Size	4096 MB
CPU Temperature	36.0 °C
PCH Temperature	39.0 °C
Ucore	1.152 V
DRAM Voltage	1.584 V

```
F1-+-:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults
```

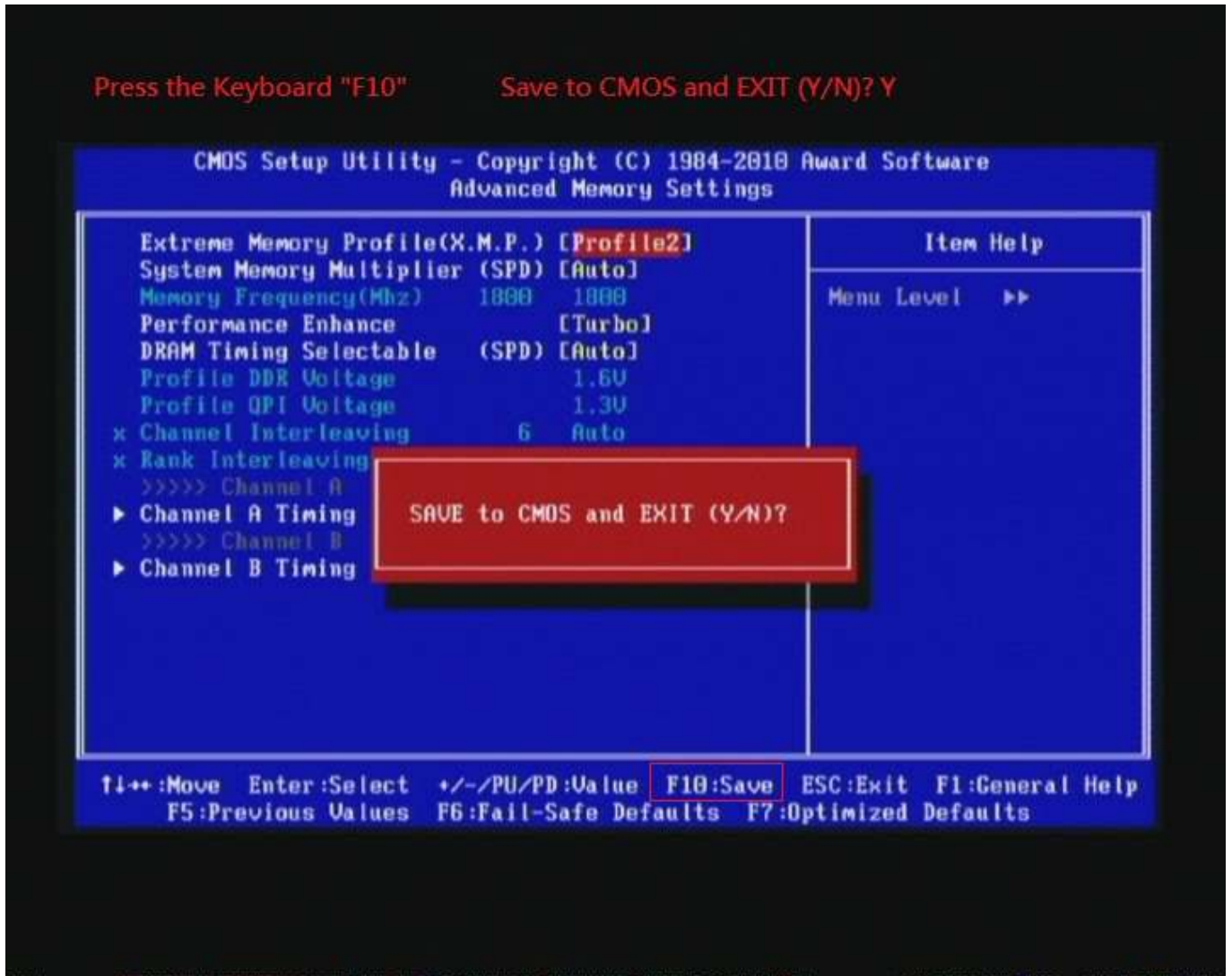
3. Enter [Extreme Memory Profile(X.M.P.)] item and choose [Profile 2] option , BIOS will load X.M.P parameter in SPD on DIMM board , which are performance optimized for PRINCO DDR3-1800 DIMM board

Step 1 : Select " Extreke Memory Profile(X.M.P.) "

Step 2 : In the pop menu, select " Profile2 "



4. 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 Windows 7 desktop environment with several application windows open, demonstrating system performance and hardware details during a stress test.

- MemTest Windows:** Four instances of MemTest are running, each testing 800 MB of RAM. All instances report 0 errors and high coverage (174.4%, 173.0%, 170.2%, and 102.8% respectively).
- CPU-Z Windows:** Four instances of CPU-Z provide detailed hardware information:
 - Processor:** Intel Core i5 760, Lynnfield, Socket 1156 LGA, 45 nm, Core Voltage 1.360 V, Specification Intel(R) Core(TM) i5 CPU 760 @ 2.80GHz.
 - Clocks (Core #0):** Core Speed 2880.2 MHz, Multiplier x 16.0, Bus Speed 180.0 MHz, QPI Link 3240.2 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 4.
 - Memory (from another instance):** Type DDR3, Size 4096 MBytes, Channels # Dual, DC Mode, NB Frequency 2880.0 MHz.
 - Timings (from another instance):** DRAM Frequency 900.0 MHz, FSB:DRAM 2:10, CAS# Latency (CL) 8.0 clocks, RAS# to CAS# Delay (tRCD) 9 clocks, RAS# Precharge (tRP) 8 clocks, Cycle Time (tRAS) 27 clocks, Row Refresh Cycle Time (tRFC) 88 clocks, Command Rate (CR) 1T, Voltage 1.50 V.
- Windows 工作管理員 (Task Manager):** Shows system resource usage:
 - CPU 使用率:** 100%
 - 記憶體 (Memory):** 3.77 GB used
 - 實體記憶體 (Physical Memory):** 4087 MB total, 223 MB free, 217 MB used, 0 MB unused.
 - 核心記憶體 (Private Memory):** 81 MB private, 15 MB non-private.
 - 系統 (System):** Control Code 8591, Execution 380, Process 36, Uptime 0:00:23:56, Recognized (MB) 4033/8173.

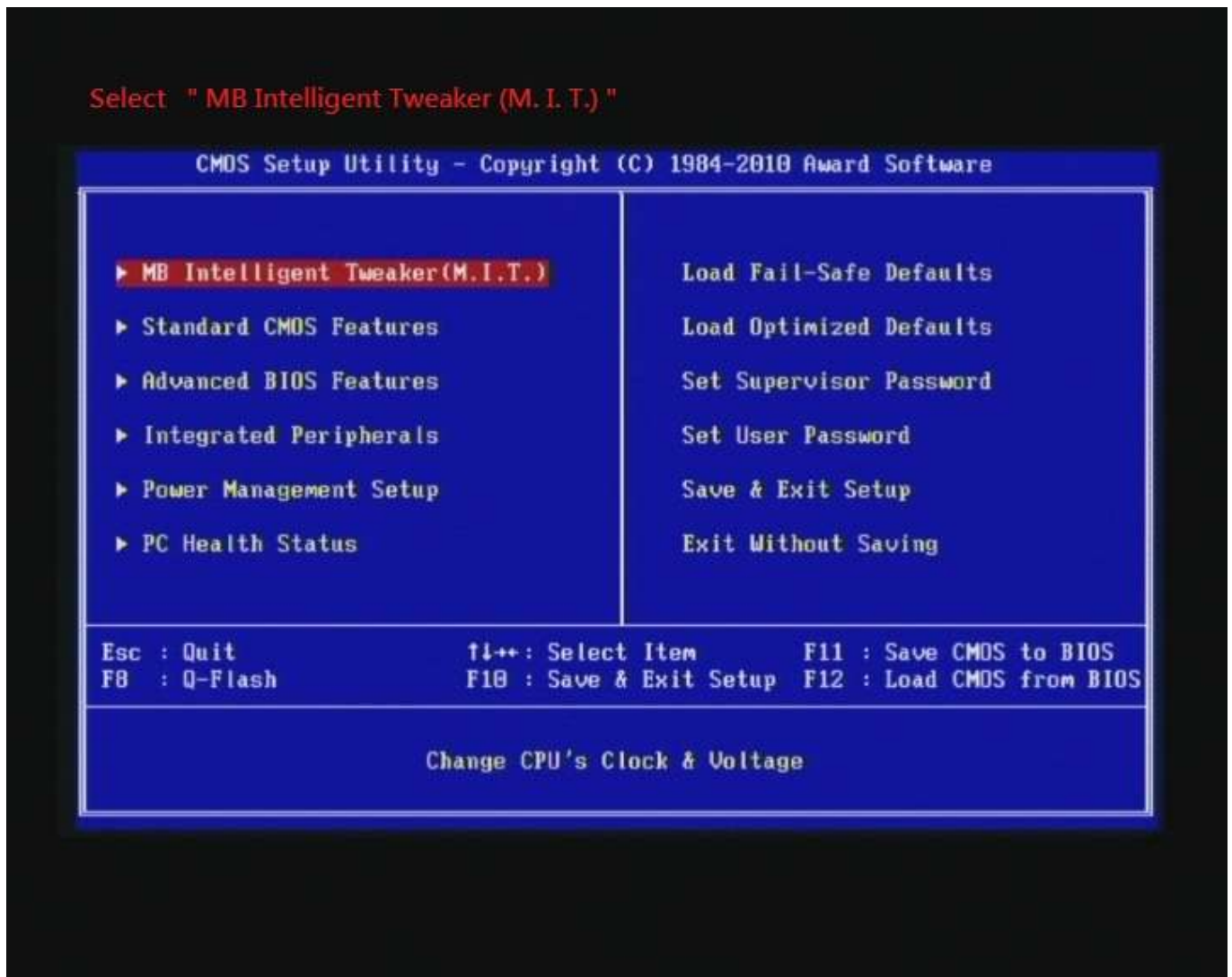
Advanced Overclocking and Testing

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 [MB Intelligent Tweaker(M.I.T.)] menu



2. Enter [Advance Frequency Setting] item

Select "Advanced Frequency Settings"

The screenshot shows the CMOS Setup Utility interface. At the top, it reads "CMOS Setup Utility - Copyright (C) 1984-2010 Award Software" and "MB Intelligent Tweaker (M.I.T.)". The main menu lists several options, with "Advanced Frequency Settings" highlighted in red. Below the menu, various system parameters are displayed, including BIOS Version, BCLK, CPU Frequency, Memory Frequency, Total Memory Size, CPU Temperature, PCH Temperature, Vcore, and DRAM Voltage. A legend at the bottom explains the navigation keys.

CMOS Setup Utility - Copyright (C) 1984-2010 Award Software MB Intelligent Tweaker (M.I.T.)	
▶ M.I.T Current Status	[Press Enter]
▶ Advanced Frequency Settings	[Press Enter]
▶ Advanced Memory Settings	[Press Enter]
▶ Advanced Voltage Settings	[Press Enter]
▶ Miscellaneous Settings	[Press Enter]

BIOS Version	FH
BCLK	133.26 MHz
CPU Frequency	2932.18 MHz
Memory Frequency	1332.82 MHz
Total Memory Size	4096 MB
CPU Temperature	37.6 °C
PCH Temperature	39.0 °C
Vcore	1.152 V
DRAM Voltage	1.584 V

↑↓←→:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

3. Set [Base Clock(BCLK) Control] item to [Enabled] , Select [BLCK Frequency(Mhz)] item , and increase to higher Base clock rate (ex:206). Then set [System Memory Multiplier (SPD)] item to [10.0]. Don't forget setting [CPU Ratio Setting] item to suitable ratio [ex:13]

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

Step 1 : Base Clock(BCLK) Control	Set [Enabled]
BCLK Frequency(Mhz)	Set [206]
Step 2 : System Memory Multiplier (SPD)	Set [10.0]
Step 3 : CPU Clock Ratio	Set [13 X]



then return to previous to

[MB Intelligent Tweaker(M.I.T.)] menu

4. Enter [Advance Memory Setting] item

Select "Advanced Memory Settings"

CMOS Setup Utility - Copyright (C) 1984-2010 Award Software
MB Intelligent Tweaker(M.I.T.)

		Item Help
▶ M.I.T Current Status	[Press Enter]	
▶ Advanced Frequency Settings	[Press Enter]	
▶ Advanced Memory Settings	[Press Enter]	Menu Level ▶
▶ Advanced Voltage Settings	[Press Enter]	Configure DRAM Features
▶ Miscellaneous Settings	[Press Enter]	

BIOS Version	FH
BCLK	133.27 MHz
CPU Frequency	1865.94 MHz
Memory Frequency	1332.87 MHz
Total Memory Size	4096 MB
CPU Temperature	28.8 °C
PCH Temperature	39.0 °C
Ucore	0.976 V
DRAM Voltage	1.584 V

F1:↔:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

5. Set [DRAM Timing Selectable (SPD)] item to [Quick]

6. Enter [Channel A Timing Settings] item

Step 1 : DRAM Timing Selectable (SPD)

Set [Quick]

Step 2 : Select " Channel A Timing Settings "



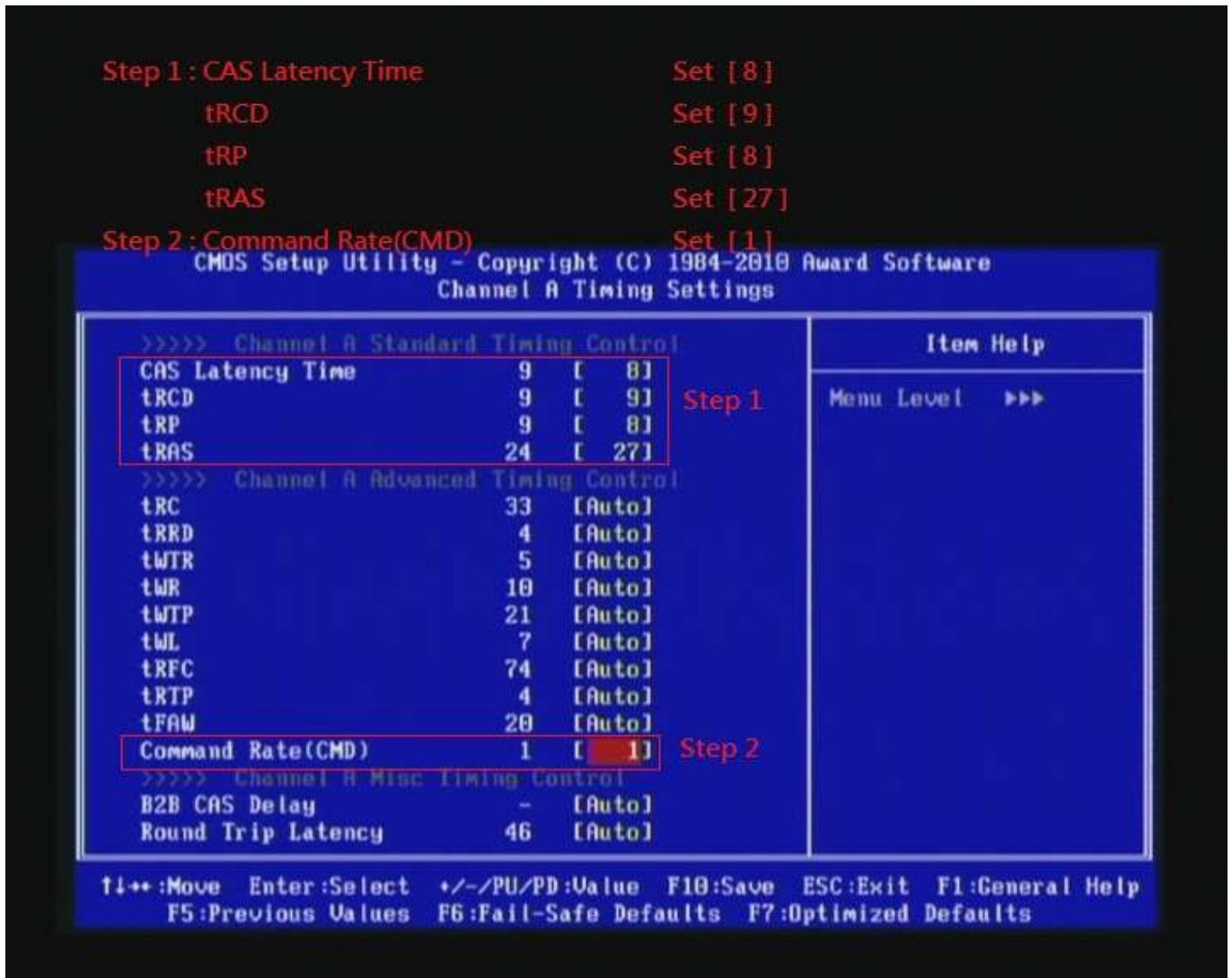
7. set [CAS Latency Time] item to [8]

set [tRCD] item to [9]

set [tRP] item to [8]

set [tRAS] item to [27]

set [DRAM Timing Mode] item to [1]



then return to previous to

[MB Intelligent Tweaker(M.I.T.)] menu

8. Enter [Advance Voltage Setting] item

Select "Advanced Voltage Settings"

CMOS Setup Utility - Copyright (C) 1984-2010 Award Software
MB Intelligent Tweaker (M.I.T.)

		Item Help
▶ M.I.T Current Status	[Press Enter]	
▶ Advanced Frequency Settings	[Press Enter]	
▶ Advanced Memory Settings	[Press Enter]	
▶ Advanced Voltage Settings	[Press Enter]	Menu Level ▶
▶ Miscellaneous Settings	[Press Enter]	

BIOS Version	FH
BCLK	133.27 MHz
CPU Frequency	2932.13 MHz
Memory Frequency	1332.84 MHz
Total Memory Size	4096 MB
CPU Temperature	35.9 °C
PCH Temperature	39.0 °C
Ucore	1.152 V
DRAM Voltage	1.584 V

F1: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

9. Select [CPU Vcore] item to [1.20000V]

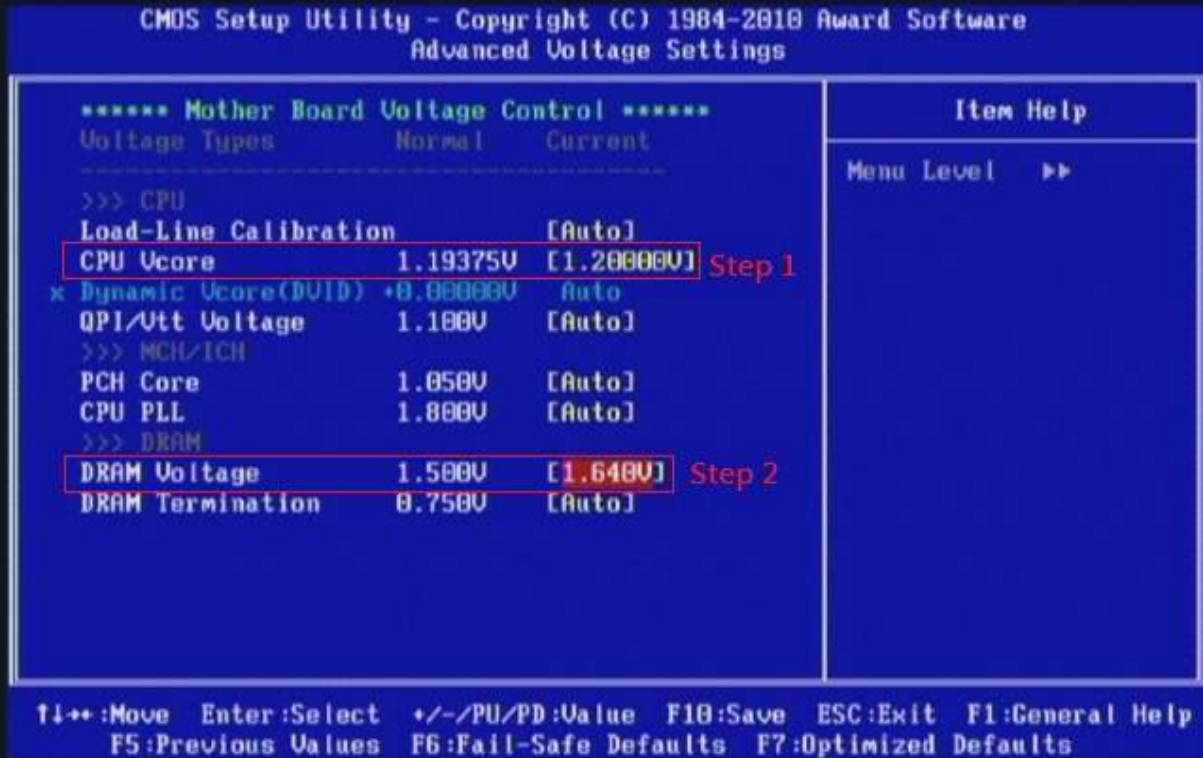
Select[DRAM Voltage] item , and set the value to [1.640V]

Step 1: CPU Vcore

Set [1.20000V]

Step 2: DRAM Voltage

Set [1.640V]



10. Save BIOS changes [F10] and exit

Press the Keyboard "F10"

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

CMOS Setup Utility - Copyright (C) 1984-2010 Award Software
Advanced Voltage Settings

***** Mother Board Voltage Control *****			Item Help
Voltage Types	Normal	Current	

>>> CPU			Menu Level >>
Load-Line Calibration		[Auto]	
CPU Vcore	1.19375V	[1.20000V]	
x Dynamic Vcore(BVID)	+0.00000V	Auto	
QPI/Vtt Voltage	1.100V	[Auto]	
>>> MCH/ICH			
PCH Core			
CPU PLL			
>>> DRAM			
DRAM Voltage			
DRAM Termination	0.750V	[Auto]	

SAVE to CMOS and EXIT (Y/N)?

F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Test result?

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

(Data rate : $1030.0 \times 2 = 2060$, timing : 8, 9, 8, 27, multi-core test => pass!)

Four MemTest86 windows are shown, each reporting 0 errors and a coverage percentage:

- Top-left: 135.6% Coverage, 0 Errors
- Top-right: 134.0% Coverage, 0 Errors
- Bottom-left: 134.0% Coverage, 0 Errors
- Bottom-right: 114.4% Coverage, 0 Errors

Each window includes a text box for 'Enter megabytes of RAM to test' (set to 850), 'Start Testing' and 'Stop Testing' buttons, and an 'About MemTest' button. A note at the bottom of each window suggests purchasing the PRO or Deluxe versions for additional features.

CPU-Z window showing processor details:

- Processor: Intel Core i5 760
- Code Name: Lynnfield
- Package: Socket 1156 LGA
- Technology: 45 nm
- Core Voltage: 1.184 V
- Specification: Intel(R) Core(TM) i5 CPU 760 @ 2.80GHz
- Family: 6, Model: E, Stepping: 5
- Ext. Family: 6, Ext. Model: 1E, Revision: B1
- Instructions: MMX, SSE (1, 2, 3, 3S, 4.1, 4.2), EM64T, VT-x
- Clocks (Core #0): Core Speed 2678.0 MHz, Multiplier x 13.0, Bus Speed 206.0 MHz, QPI Link 3296.0 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 4

CPU-Z window showing motherboard details:

- Manufacturer: Gigabyte Technology
- Model: P55-UD3L
- Chipset: Intel
- Southbridge: Intel
- LPCIO: ITE
- BIOS: Brand Award Software International, Version FH, Date 06/24/2010
- Graphic Interface: Version, Link Width x16, Side Band

CPU-Z window showing memory details:

- General: Type DDR3, Size 4096 MBytes, Channels # Dual, DC Mode, NB Frequency 3296.1 MHz
- Timings:

DRAM Frequency	1030.0 MHz
FSB:DRAM	2:10
CAS# Latency (CL)	8.0 clocks
RAS# to CAS# Delay (tRCD)	9 clocks
RAS# Precharge (tRP)	8 clocks
Cycle Time (tRAS)	27 clocks
Row Refresh Cycle Time (tRFC)	114 clocks
Command Rate (CR)	1T
DRAM Idle Timer	
Total CAS# (tRDRAM)	
Row To Column (tRCD)	

CPU-Z window showing memory slot selection:

- Memory Slot Selection: Slot #1, DDR3
- Module Size: 2048 MByte
- Max Bandwidth: PC3-10700 (6670)
- Manufacturer: PRINCO
- Part Number: PRINCO-DR3-1800
- Serial Number: [blacked out]
- Timings Table:

	JEDEC #3	JEDEC #4
Frequency	609 MHz	667 MHz
CAS# Latency	8.0	8.0
RAS# to CAS#	8	8
RAS# Precharge	8	8
tRAS	22	22
tRC	30	30
Command Rate		
Voltage	1.50 V	1.50 V

Windows Task Manager window showing system performance:

- CPU 使用率: 100%
- 記憶體: 3.76 GB
- 系統: 控制代碼 8173, 執行緒 375, 處理程序 34, 存留時間 0:00:19:29, 認可 (MB) 4021 / 8173
- 資源監視器 (R)...
- 處理程序: 34, CPU 使用率: 100%, 實體記憶體: 94%