

PRINCO DDR3-1600 user guide and testing for GA-H55M-USB3 Motherboard

CPU i3-540 3.07G

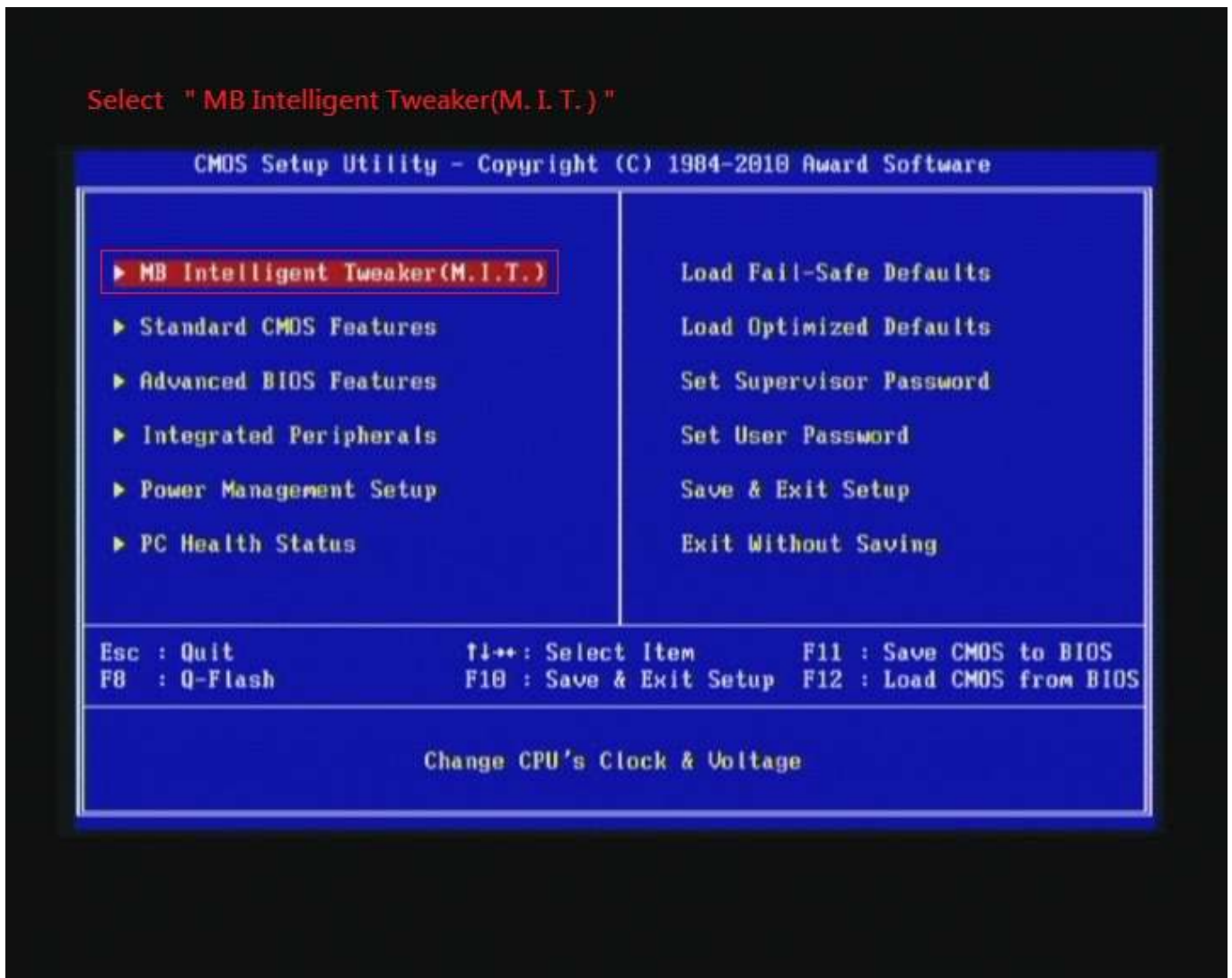


Part I : Standard test

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



2. Enter [Advance Memory Setting] item

Select "Advanced Memory Settings"



3. Enter [Extreme Memory Profile(X.M.P.)] item and choose [Profile 1] option , BIOS will load X.M.P parameter in SPD on DIMM board , which are performance optimized for PRINCO DDR3-1600 DIMM board



4. 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 : $800.1 * 2 = 1600$, timing : 7, 9, 7, 24, multi-core test => pass!)

The image displays a collage of screenshots from a Windows 7 system. On the left, four MemTest86 windows are shown, each reporting 0 errors and high coverage (134.7%, 135.6%, 140.5%, and 214.8%). The bottom-left screenshot shows the Windows Task Manager Performance tab, indicating 100% CPU usage and 3.62 GB of memory usage. On the right, four CPU-Z screenshots provide detailed hardware information:

- Processor:** Intel Core i3 540 (Clarkdale), Socket 1156 LGA, 32 nm technology, 3.07 GHz.
- Cache:** L1 Data: 2 x 32 KBytes (8-way); L1 Inst: 2 x 32 KBytes (4-way); Level 2: 2 x 256 KBytes (8-way); Level 3: 4 MBytes (16-way).
- Memory:** Type: DDR3; Size: 4096 MBytes; Channels: Dual; DC Mode: Symmetric; NB Frequency: 2560.3 MHz.
- Timings:** DRAM Frequency: 800.1 MHz; FSB-DRAM: 4:20; CAS# Latency (CL): 7.0 clocks; RAS# to CAS# Delay (tRCD): 9 clocks; RAS# Precharge (tRP): 7 clocks; Cycle Time (tRAS): 27 clocks; Row Refresh Cycle Time (tRFC): 98 clocks; Command Rate (CR): 1T; Voltage: 1.50 V.

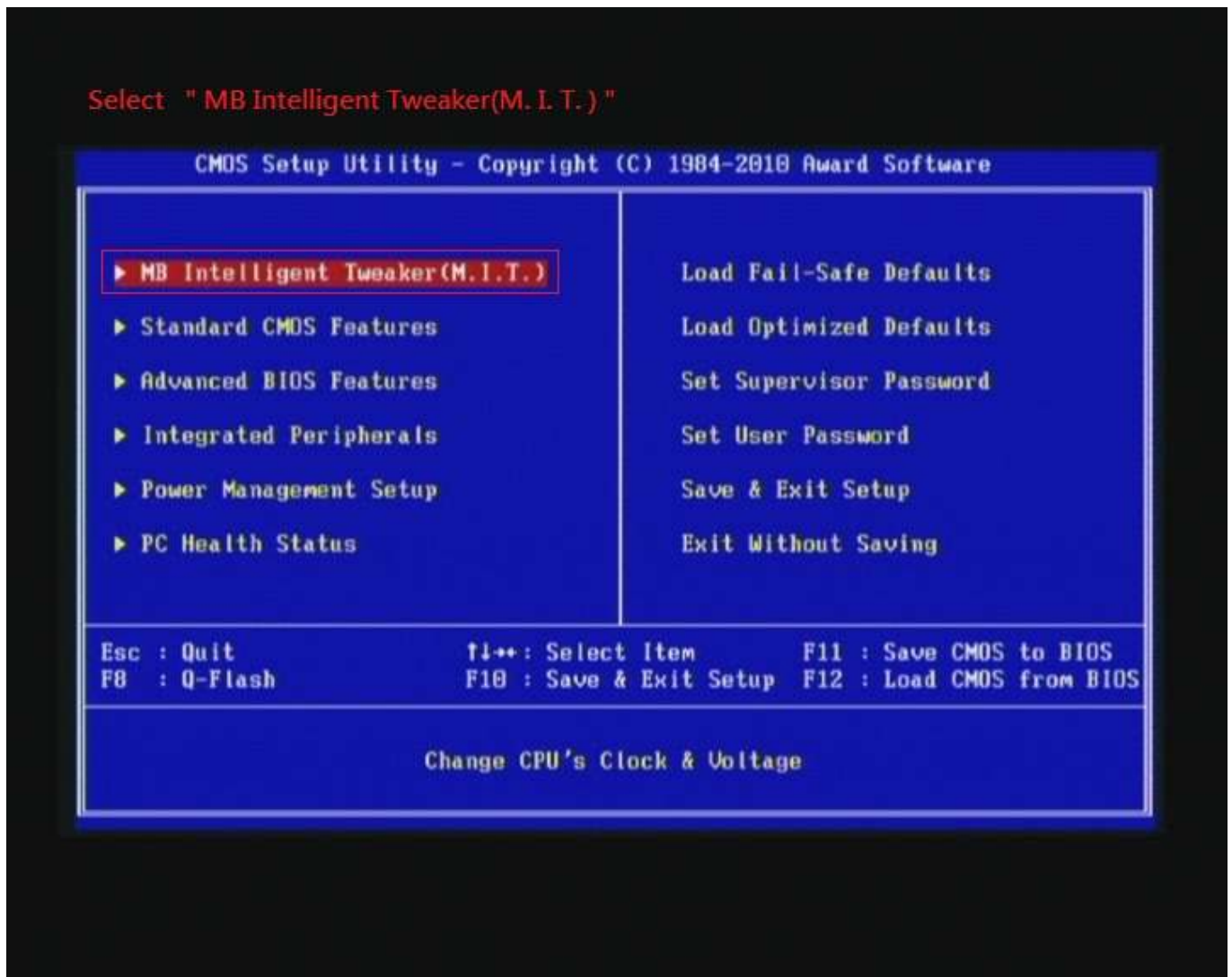
Advanced Overclocking and Testing

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



2. Enter [Advance Frequency Setting] item

Select "Advanced Frequency 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]	
▶ Miscellaneous Settings	[Press Enter]	

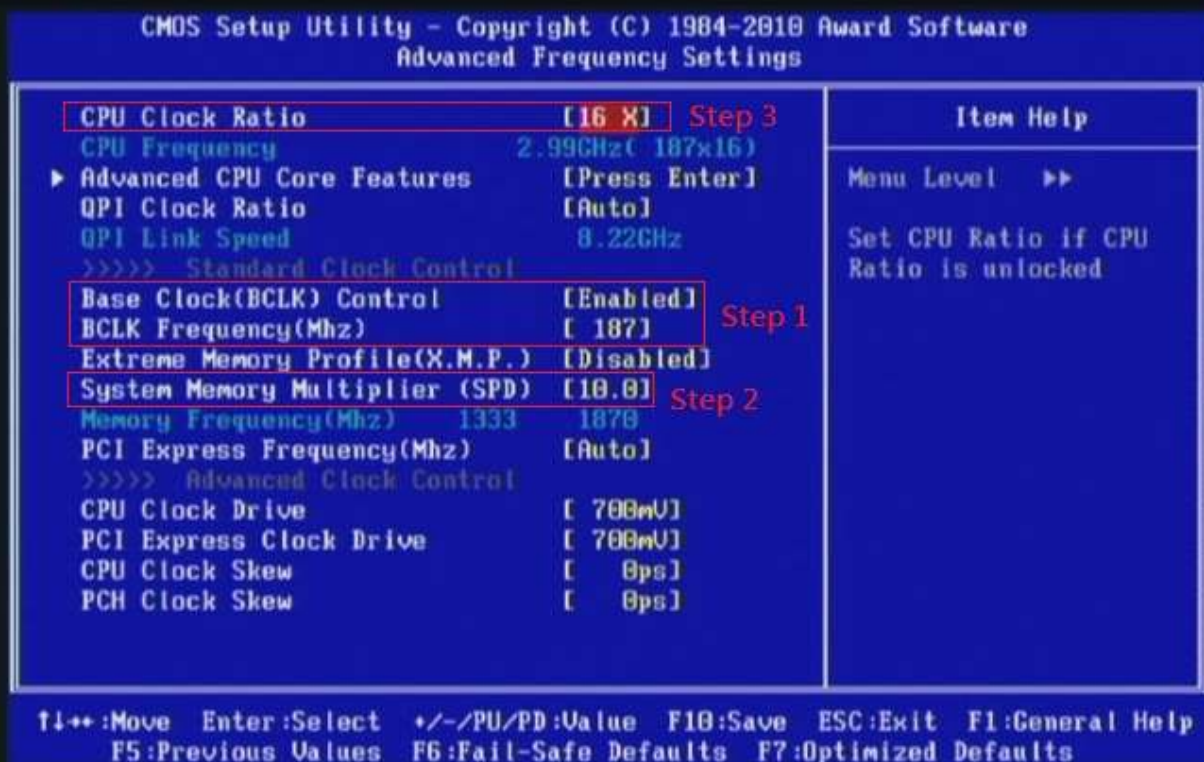
BIOS Version	F10
BCLK	187.06 MHz
CPU Frequency	2993.03 MHz
Memory Frequency	1870.62 MHz
Total Memory Size	4096 MB
CPU Temperature	38.1 °C
PCH Temperature	39.0 °C
Vcore	1.216 V
DRAM Voltage	1.632 V

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:187). Then set [System Memory Multiplier (SPD)] item to [10.0]. Don't forget setting [CPU Ratio Setting] item to suitable ratio [ex:16]

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

Step 1 : Base Clock (BCLK) Control	Set [Enabled]
BCLK Frequency (Mhz)	Set [187]
Step 2 : System Memory Multiplier (SPD)	Set [10.0]
Step 3 : CPU Clock Ratio	Set [16 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	F10
BCLK	187.07 MHz
CPU Frequency	2992.84 MHz
Memory Frequency	1870.77 MHz
Total Memory Size	4096 MB
CPU Temperature	37.6 °C
PCH Temperature	39.0 °C
Ucore	1.216 V
DRAM Voltage	1.632 V

F10: 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]

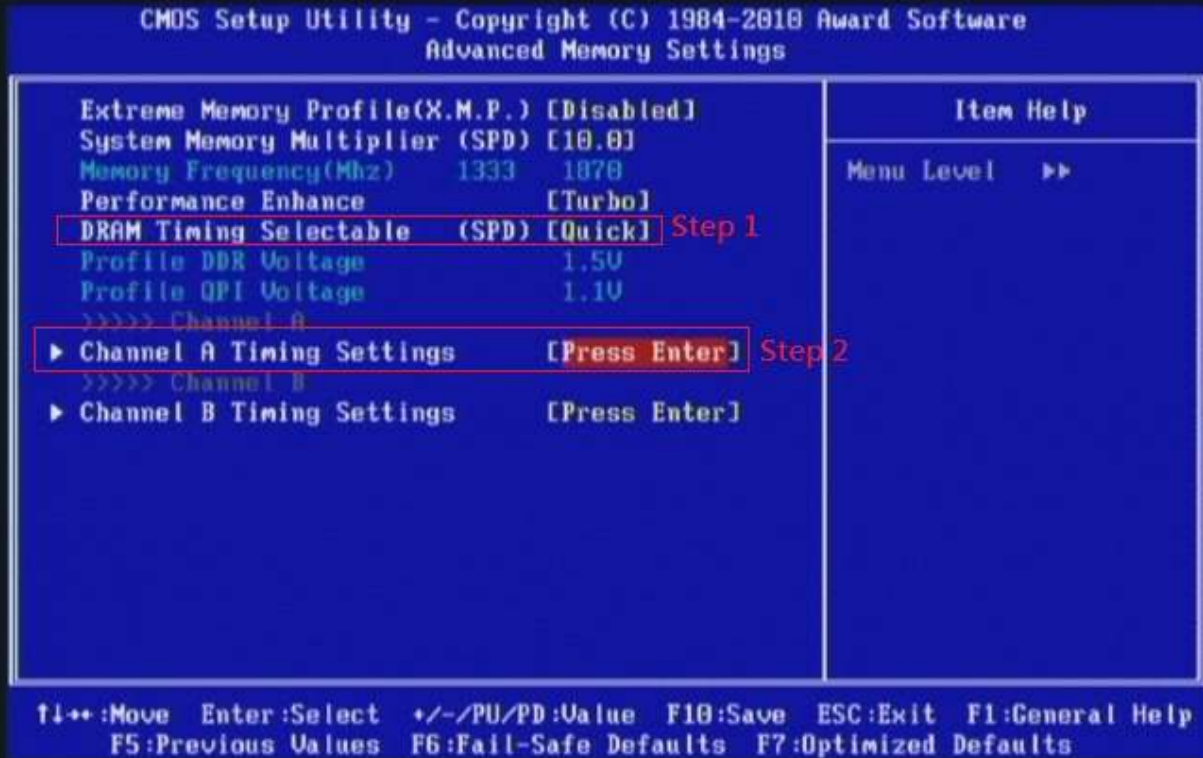
6. Enter [Channel A Timing Settings] item

Step 1 : DRAM Timing Selectable (SPD)

Set [Quick]

Step 2 : Select "Channel A Timing Setting"

into Timing Settings



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

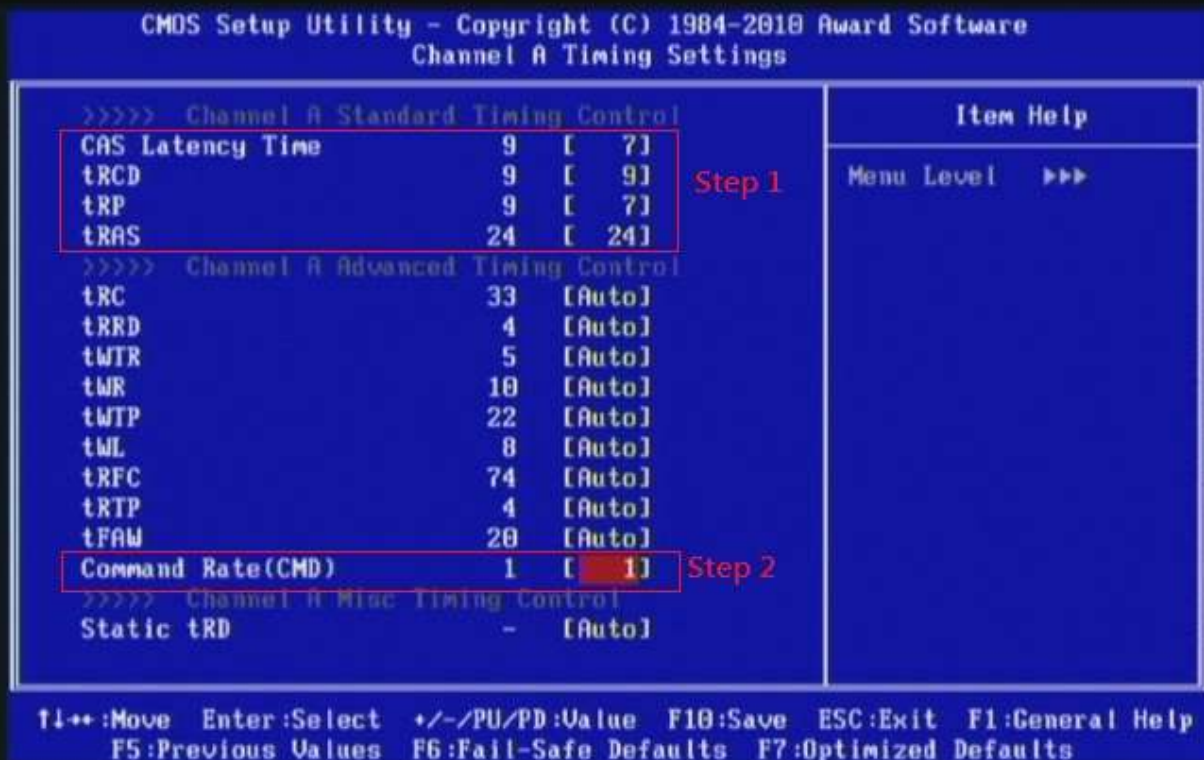
set [tRCD] item to [9]

set [tRP] item to [7]

set [tRAS] item to [24]

set [DRAM Timing Mode] item to [1]

Step 1 : CAS Latency Time Set [7]
 tRCD Set [9]
 tRP Set [7]
 tRAS Set [24]
Step 2 : Command Rate(CMD) Set [1]



then return to previous to

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

8. Enter [Advance Voltage Setting] item

Select " Advanced Voltage Settings "

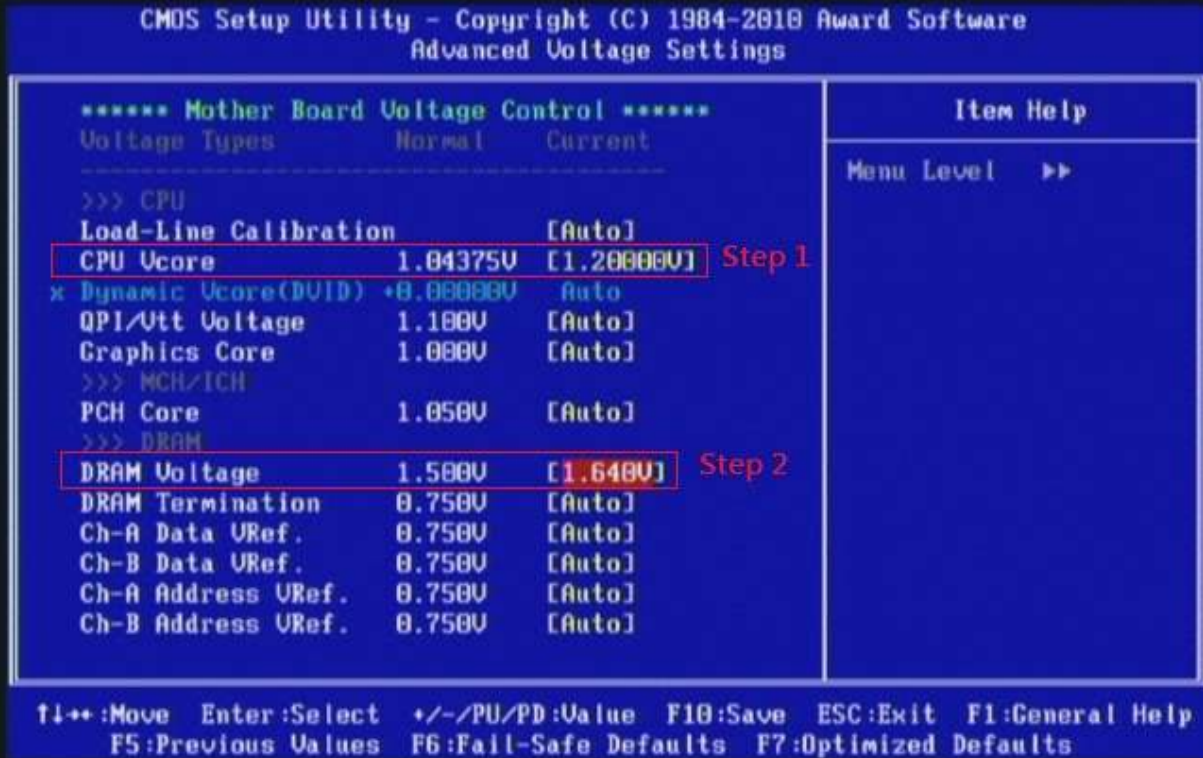


9. Select [CPU Vcore] item to [1.20000V]

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	Menu Level >>
>>> CPU				
Load-Line Calibration			[Auto]	
CPU Vcore		1.04375V	[1.20000V]	
x Dynamic Vcore(BUID)		+0.00000V	Auto	
QPI/Vtt Voltage		1.100V	[Auto]	
Graphics Core				
>>> MCH/ICH				
PCH Core				
>>> DRAM				
DRAM Voltage				
DRAM Termination		0.750V	[Auto]	
Ch-A Data VRef.		0.750V	[Auto]	
Ch-B Data VRef.		0.750V	[Auto]	
Ch-A Address VRef.		0.750V	[Auto]	
Ch-B Address VRef.		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 DDR3-1600 potential.

(Data rate : $935.1 \times 2 = 1870$, timing : 7, 9, 7, 24, multi-core test => pass!)

Four MemTest86 windows are shown, each reporting 0 errors and a coverage percentage: 166.8%, 169.2%, 165.3%, and 265.3%.

CPU-Z Processor Information:

- Name: Intel Core i3 540
- Code Name: Clarkdale
- Package: Socket 1156 LGA
- Technology: 32 nm
- Core Voltage: 1.216 V
- Specification: Intel(R) Core(TM) i3 CPU 540 @ 3.07GHz
- Family: 6, Model: 5, Stepping: 2
- Ext. Family: 6, Ext. Model: 25, Revision: C2
- Instructions: MMX, SSE (1, 2, 3, 3S, 4.1, 4.2), EM64T, VT-x
- Clocks (Core #0): Core Speed 2992.4 MHz, Multiplier x 16.0, Bus Speed 187.0 MHz, QPI Link 4114.6 MHz
- Cache: L1 Data 2 x 32 KBytes 8-way, L1 Inst. 2 x 32 KBytes 4-way, Level 2 2 x 256 KBytes 8-way, Level 3 4 MBytes 16-way
- Selection: Processor #1, Cores 2, Threads 4

CPU-Z Mainboard Information:

- Manufacturer: Gigabyte Technology
- Model: H55M-USB3
- Chipset: Intel
- Southbridge: Intel
- LPCIO: ITE
- BIOS: Brand Award Software, Version F10, Date 08/25/2010
- Graphic Interface: Version, Link Width x16, Side Band

CPU-Z Memory Information:

- Type: DDR3
- Size: 4096 MBytes
- Channels #: Dual
- DC Mode: Symmetric
- NB Frequency: 2992.5 MHz
- Timings:
 - DRAM Frequency: 935.1 MHz
 - FSB-DRAM: 4:20
 - 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): 134 clocks
 - Command Rate (CR): 1T

CPU-Z Memory Slot Selection and Timings:

- Slot #1: DDR3
- Module Size: 2048 MB
- Max Bandwidth: PC3-10700 (6)
- Manufacturer: PRINCO
- Part Number: PRINCO-DR3-
- Serial Number: [Redacted]
- JEDEC #2 Timings:
 - Frequency: 533 MHz
 - CAS# Latency: 7.0
 - RAS# to CAS#: 7
 - RAS# Precharge: 7
 - tRAS: 20
 - tRC: 27
 - Command Rate: [Redacted]
 - Voltage: 1.50 V

Windows Task Manager Resource Monitor:

- CPU 使用率: 100%
- 記憶體: 3.63 GB
- 系統: 控制代碼 7976, 執行緒 356, 處理程序 33, 存留時間 0:00:33:57, 認可 (MB) 3909 / 7917
- 資源監視器 (R)...
- 處理程序: 33 | CPU 使用率: 100% | 實體記憶體: 94%