

PRINCO DDR3-1800 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 DDR3-1800 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"

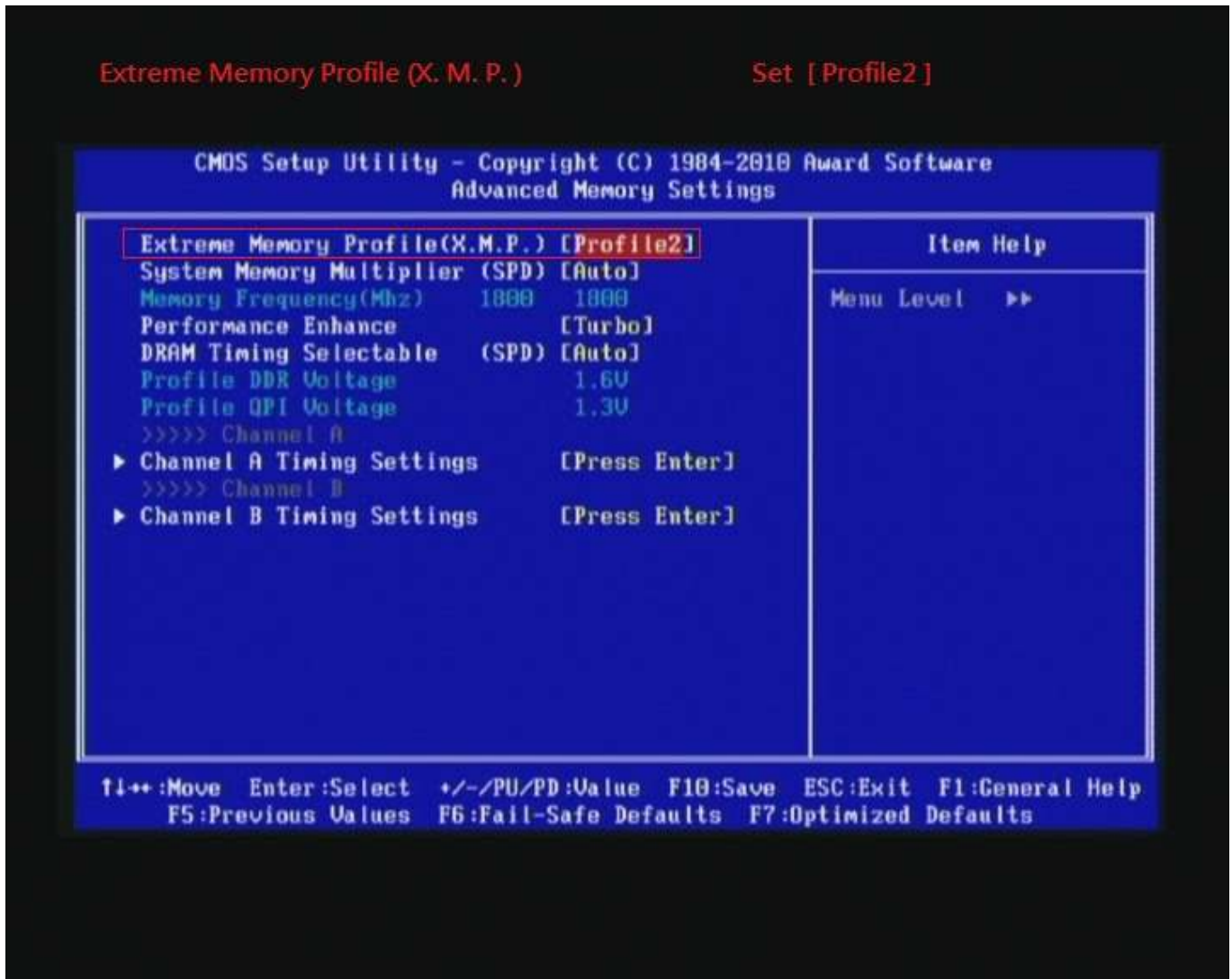
CMOS Setup Utility - Copyright (C) 1984-2010 Award Software
MB Intelligent Tweaker(M.I.T.)

		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]	

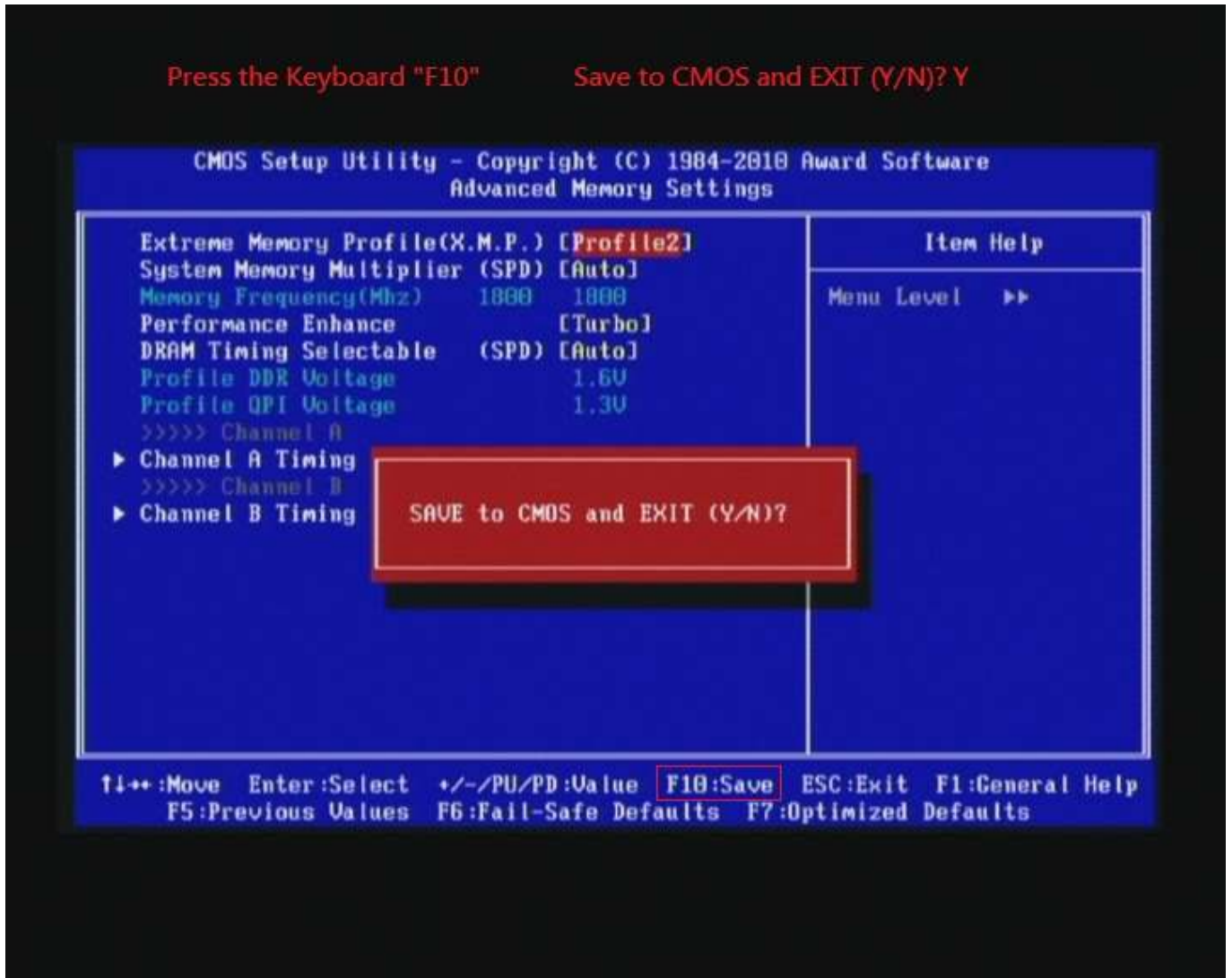
BIOS Version	F10
BCLK	133.37 MHz
CPU Frequency	3067.69 MHz
Memory Frequency	1333.00 MHz
Total Memory Size	4096 MB
CPU Temperature	33.0 °C
PCH Temperature	39.0 °C
Ucore	1.184 V
DRAM Voltage	1.568 V

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



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 : $900.1 \times 2 = 1800$, 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.

MemTest Windows: Four instances of MemTest are running, all reporting 0 errors. The first two show 133.6% and 134.8% coverage, while the last two show 135.8% and 176.0% coverage. Each window includes a text input for RAM size (860 MB) and buttons for 'Start Testing', 'Stop Testing', and 'About MemTest'.

CPU-Z Windows: Four instances of CPU-Z are open, showing system specifications. The 'Processor' tab is selected in all, displaying an Intel Core i3 540 (Clarkdale) running at 3.07 GHz. The 'Memory' tab in the bottom-right instance shows DDR3 memory at 4096 MBytes with a frequency of 900.1 MHz. The 'Timings' table in the bottom-right instance is as follows:

	JEDEC #3	JEDEC #4
Frequency	609 MHz	685 MHz
CAS# Latency	8.0	9.0
RAS# to CAS#	8	9
RAS# Precharge	8	9
tRAS	22	21
tRC	30	30
Command Rate		
Voltage	1.50 V	1.50 V

Windows Task Manager: The 'Resource Monitor' window is open, showing CPU usage at 100% and memory usage at 93%. The 'Physical Memory' section shows 3.61 GB of memory used out of 3959 MB total. The 'System' section shows 7826 MB of system memory used out of 7826 MB total.

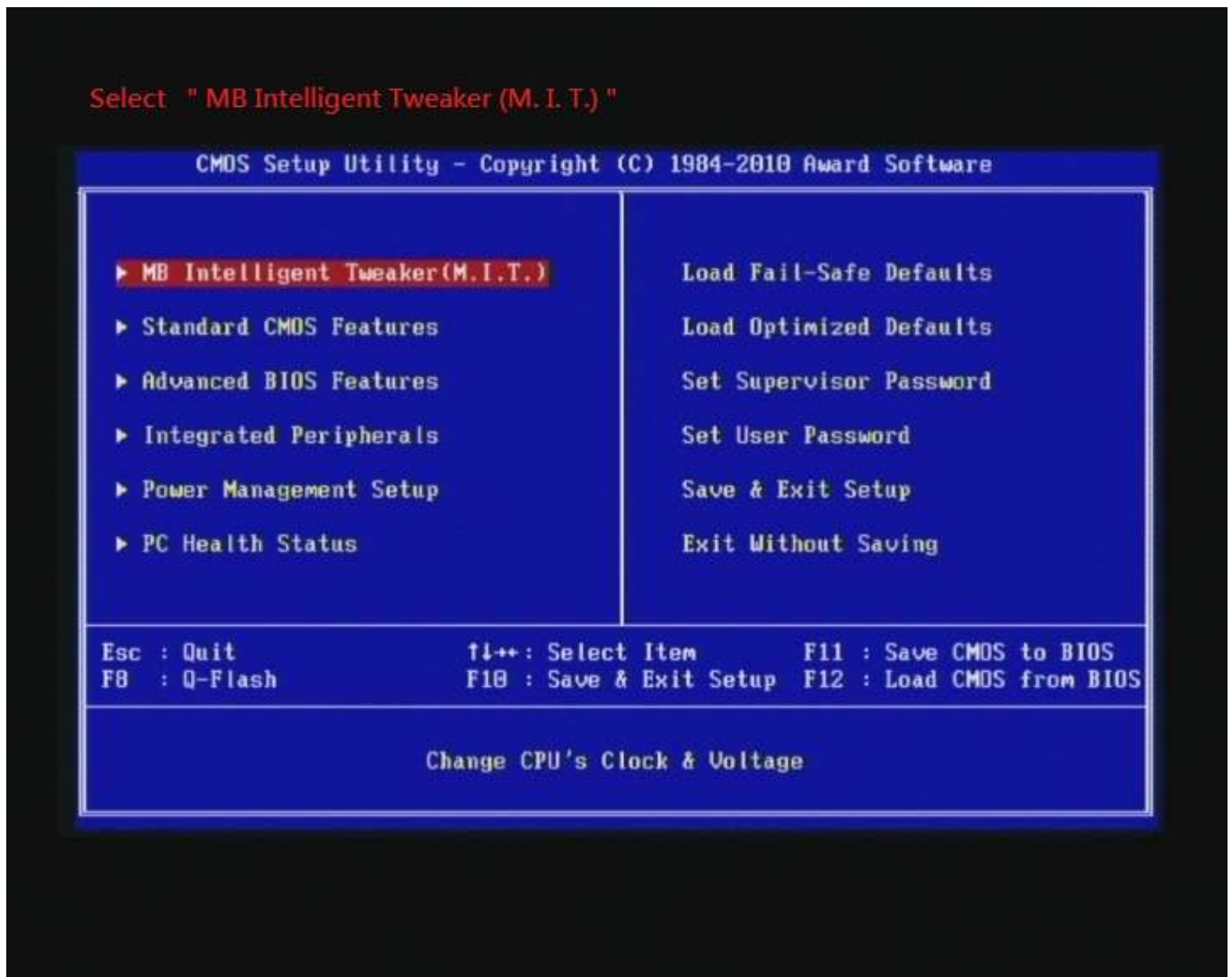
Advanced Overclocking and Testing

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"



3. Set [Base Clock(BCLK) Control] item to [Enabled] , Select [BLCK Frequency(Mhz)] item , and increase to higher Base clock rate (ex:194). Then set [System Memory Multiplier (SPD)] item to [10.0]. Don't forget setting [CPU Ratio Setting] item to suitable ratio [ex:15]

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

Step 1 : Base Clock (BCLK) Control	Set [Enabled]
BCLK Frequency (Mhz)	Set [194]
Step 2 : System Memory Multiplier (SPD)	Set [10.0]
Step 3 : CPU Clock Ratio	Set [15 X]



then return to previous to

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

4. Enter [Advance Memory Setting] item

Select "Advanced Memory Settings"

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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	133.37 MHz
CPU Frequency	3067.07 MHz
Memory Frequency	1333.81 MHz
Total Memory Size	4096 MB
CPU Temperature	31.2 °C
PCH Temperature	39.0 °C
Ucore	1.184 V
DRAM Voltage	1.568 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]

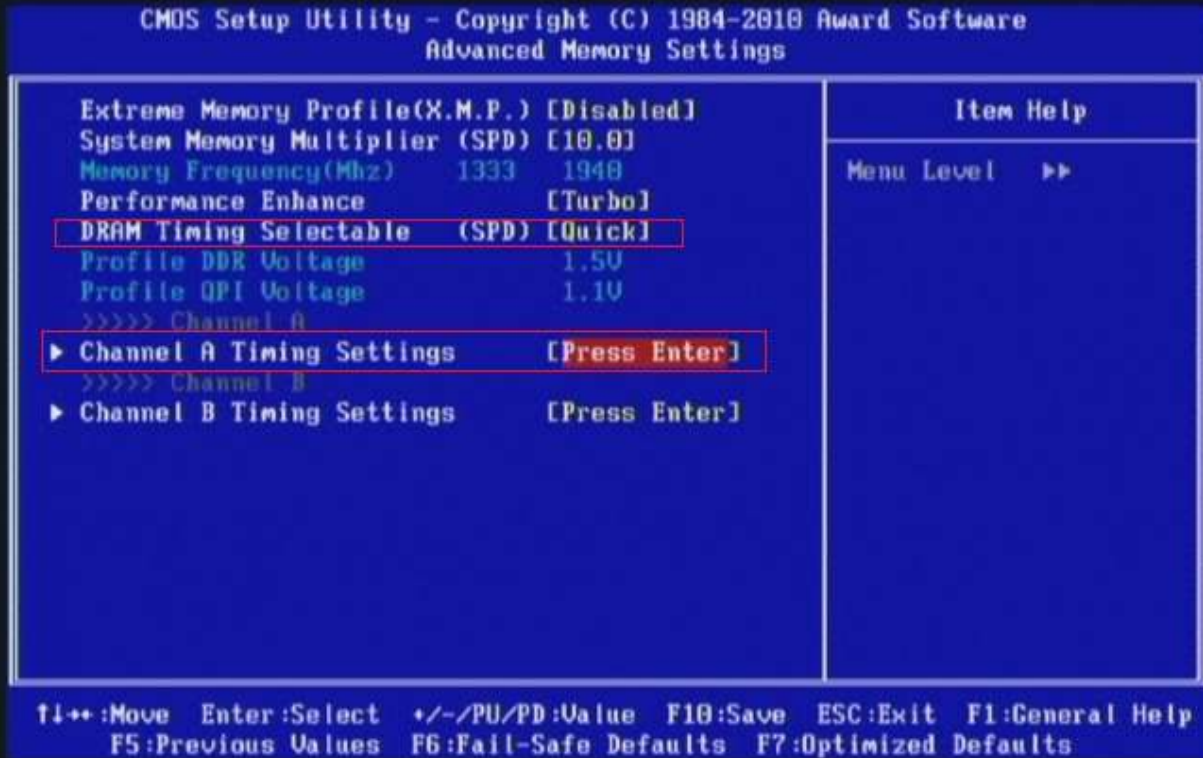
6. Enter [Channel A Timing Settings] item

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 [8]

set [tRCD] item to [9]

set [tRP] item to [8]

set [tRAS] item to [27]

set [DRAM Timing Mode] item to [1]

Step 1 : CAS Latency Time Set [8]
 tRCD Set [9]
 tRP Set [8]
 tRAS Set [27]
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"

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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	F10
BCLK	133.37 MHz
CPU Frequency	3867.64 MHz
Memory Frequency	1333.75 MHz
Total Memory Size	4096 MB
CPU Temperature	38.3 °C
PCH Temperature	39.0 °C
Ucore	1.184 V
DRAM Voltage	1.568 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

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

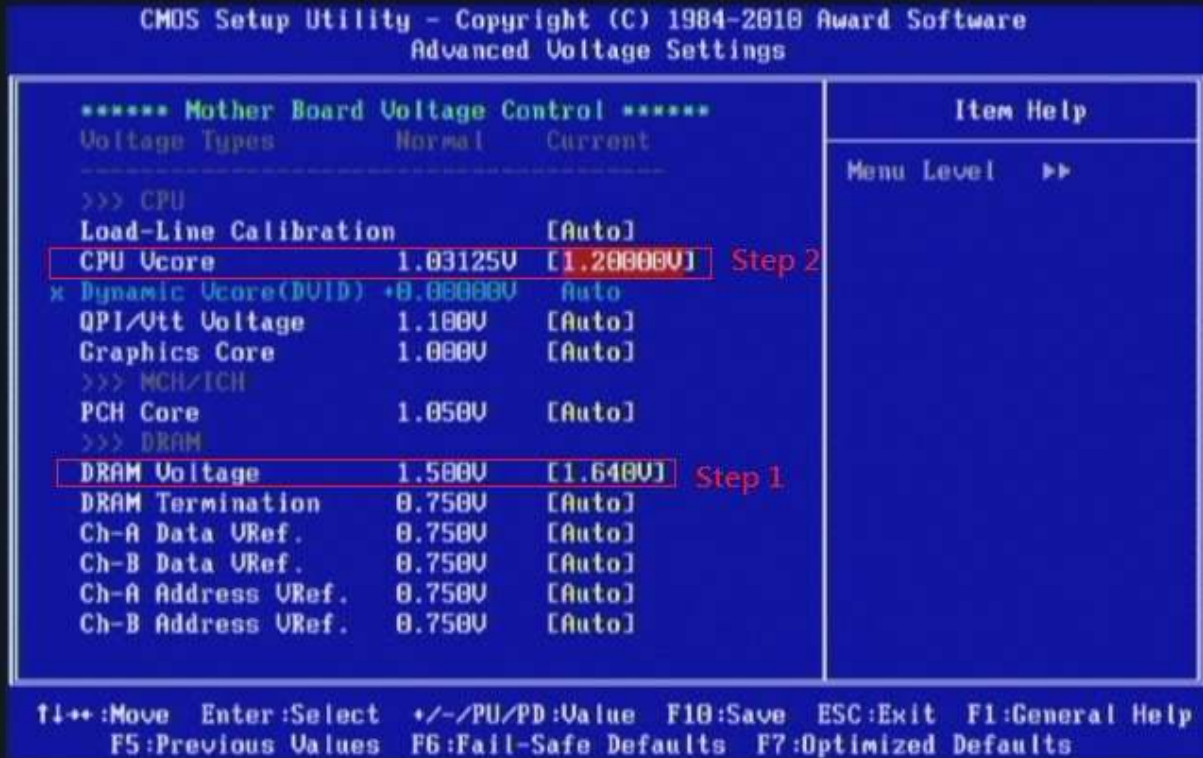
Select[DRAM Voltage] item , and set the value to [1.640V]

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

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Advanced Voltage Settings

***** Mother Board Voltage Control *****			Item Help
Voltage Types	Normal	Current	Menu Level >>
>>> CPU			
Load-Line Calibration		[Auto]	
CPU Ucore	1.03125V	[1.20000V]	
x Dynamic Ucore(BUID)	+0.00000V	Auto	
QPI/Utt 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 DDR3-1800 potential.

(Data rate : $970.1 * 2 = 1940$, timing : 8, 9, 8, 27, multi-core test => pass!)

Four MemTest windows are shown in a 2x2 grid. Each window displays '0 Errors' and a coverage percentage: 102.1%, 105.5%, 102.4%, and 143.9%. The RAM size is set to 860 MB. The 'All unused RAM' option is selected in the bottom-right window.

Windows Task Manager screenshot showing system performance. CPU usage is at 100%. Memory usage is at 93% (3.62 GB used). The taskbar shows 34 running processes.

CPU-Z Processor tab showing Intel Core i3 540 specifications. Processor Name: Intel Core i3 540, Code Name: Clarkdale, Brand ID: Intel Core i3 inside. 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, SS, 4.1, 4.2), EM64T, VT-x. Caches (Core #0): Core Speed 2910.4 MHz, Multiplier x 15.0, Bus Speed 194.0 MHz, QPI Link 4268.5 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 tab showing Gigabyte H55M-USB3 motherboard. Manufacturer: Gigabyte Technology, Model: H55M-USB3. Chipset: Intel, Southbridge: Intel, LPCIO: ITE. BIOS: Brand: Award Software Inc., Version: F10, Date: 08/25/2010. Graphic Interface: Version, Link Width: x16, Side Band.

CPU-Z Memory tab showing DDR3 4096 MBytes. Channels #: Dual, DC Mode: Symmetric, NB Frequency: 3104.3 MHz. Timings: DRAM Frequency 970.1 MHz, FSB:DRAM 4:20, 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) 118 clocks, Command Rate (CR) 1T, DRAM Idle Timer, Total CAS# (tRDRAM), Row To Column (tRCD).

CPU-Z Memory Slot Selection tab showing PRINCO-DR3 module. Slot #1: DDR3, Module Size: 2048 MB, Max Bandwidth: PC3-10700, Manufacturer: PRINCO, Part Number: PRINCO-DR3, Serial Number. Timings Table: JEDEC #3, Frequency 609 MHz, CAS# Latency 8.0, RAS# to CAS# 8, RAS# Precharge 8, tRAS 22, tRC 30, Command Rate, Voltage 1.50 V.