

PRINCO DDR3-1800 user guide and testing for Asus P6X58D Motherboard

CPU i7-950 3.07G

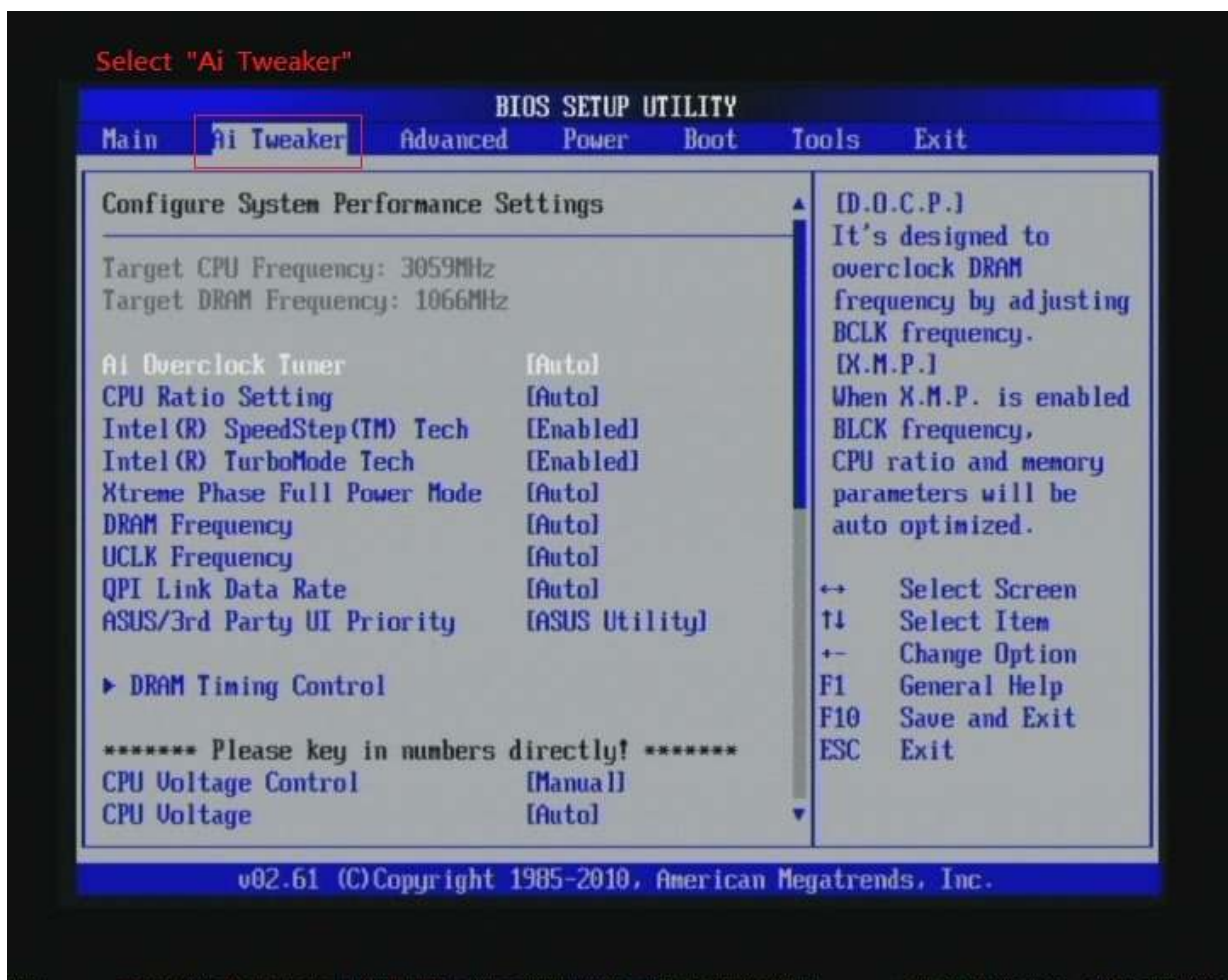


Part I : Standard test

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 [Ai Tweaker] menu



2. Enter [Ai Overclock Tuner] item and choose X.M.P option

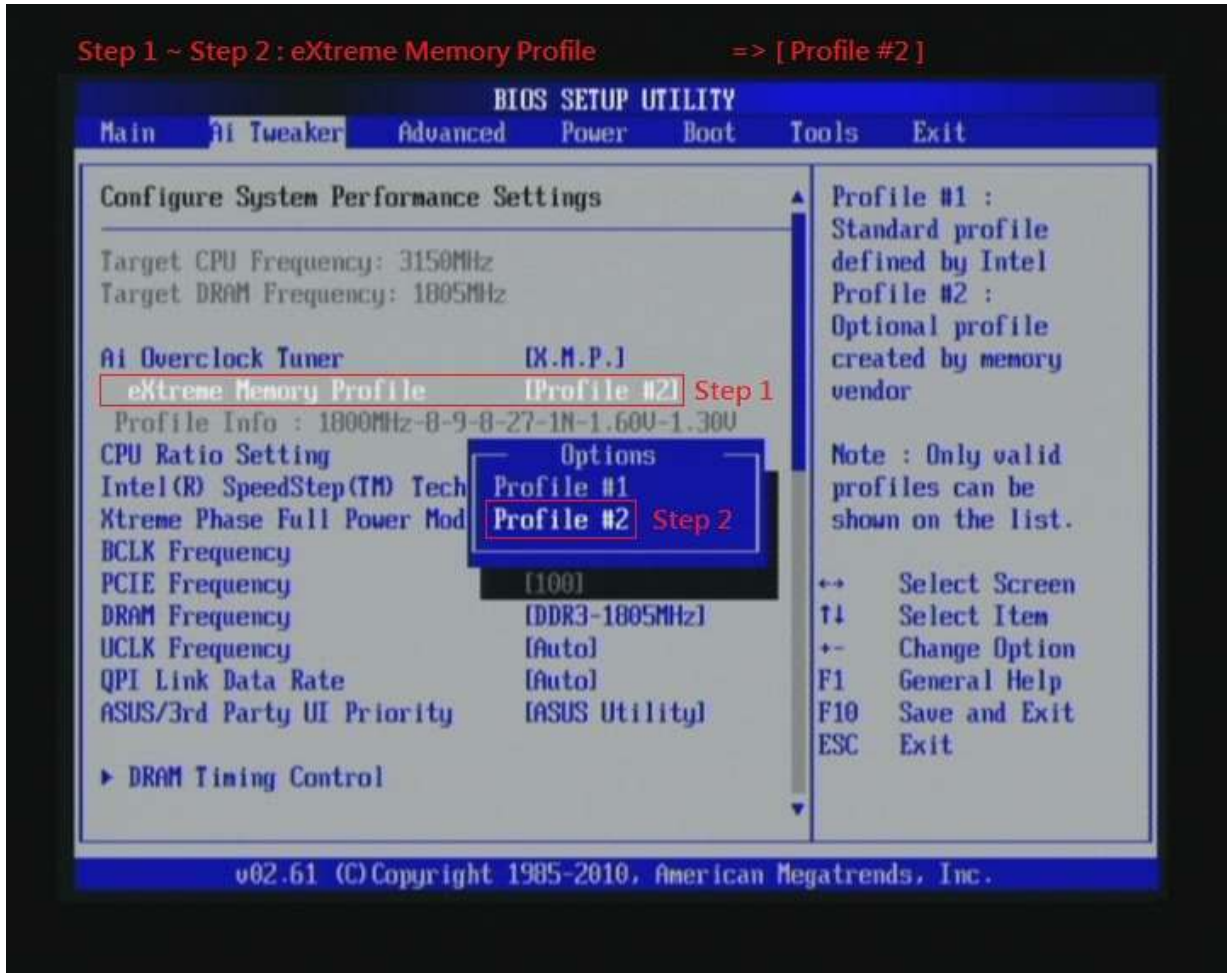
*BIOS will load X.M.P parameter in SPD on DIMM board ,
which are performance optimized for PRINCO DDR3-1800
DIMM board*



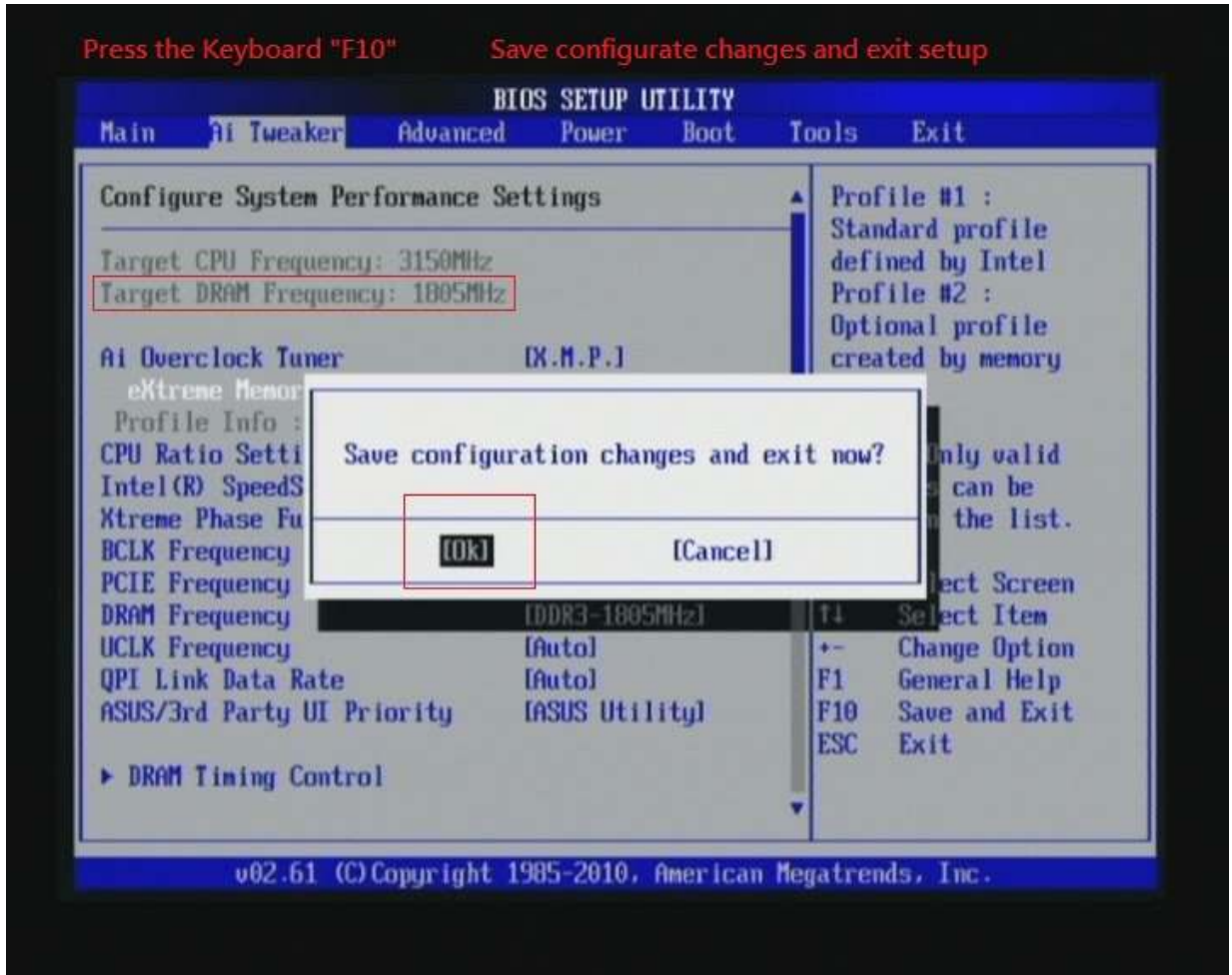
3. Enter [eXtreme Memory Profile] item and select Profile #2

ps: profile #2 for 1800Mhz

profile #1 for 1600Mhz



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 : $900 \times 2 = 1800$, timing : 8, 9, 8, 27, multi-core test => pass!)

MemTest86 results summary:

Window	Coverage	Errors
1	107.9%	0
2	103.9%	0
3	106.8%	0
4	103.9%	0
5	104.2%	0
6	104.0%	0
7	98.2%	0
8	224.1%	0

CPU-Z Processor Tab

Property	Value
Name	Intel Core i7 950
Code Name	Bloomfield
Package	Socket 1366 LGA
Technology	45 nm
Core Voltage	1.208 V
Specification	Intel(R) Core(TM) i7 CPU 950 @ 3.07GHz
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 3150.1 MHz, Multiplier x 21.0, Bus Speed 150.0 MHz, QPI Link 3600.2 MHz

CPU-Z Mainboard Tab

Property	Value
Manufacturer	ASUSTeK Computer INC.
Model	P6X58D PREMIUM
Chipset	Intel
Southbridge	Intel 8280
LPCIO	Winbond

BIOS: Brand American Megatrends Inc., Version 0813, Date 05/25/2010

CPU-Z Memory Tab

Property	Value
Type	DDR3
Size	6144 MBytes
Channels #	Triple
NB Frequency	3600.0 MHz

Timings:

Property	Value
DRAM Frequency	900.0 MHz
FSB:DRAM	2:12
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

CPU-Z Memory Slot Selection Tab

Property	Value
Module Size	2048 MBytes
Max Bandwidth	PC3-10700 (667 MHz)
Part Number	PRINCO-DR3-1800C

Timings Table:

Property	JEDEC #3	JEDEC
Frequency	609 MHz	685 MHz
CAS# Latency	8.0	9.0
RAS# to CAS#	8	9
RAS# Precharge	8	9
tRAS	22	25
tRC	30	34
Command Rate		
Voltage	1.50 V	1.50 V

Windows 工作管理員

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: 5.68 GB

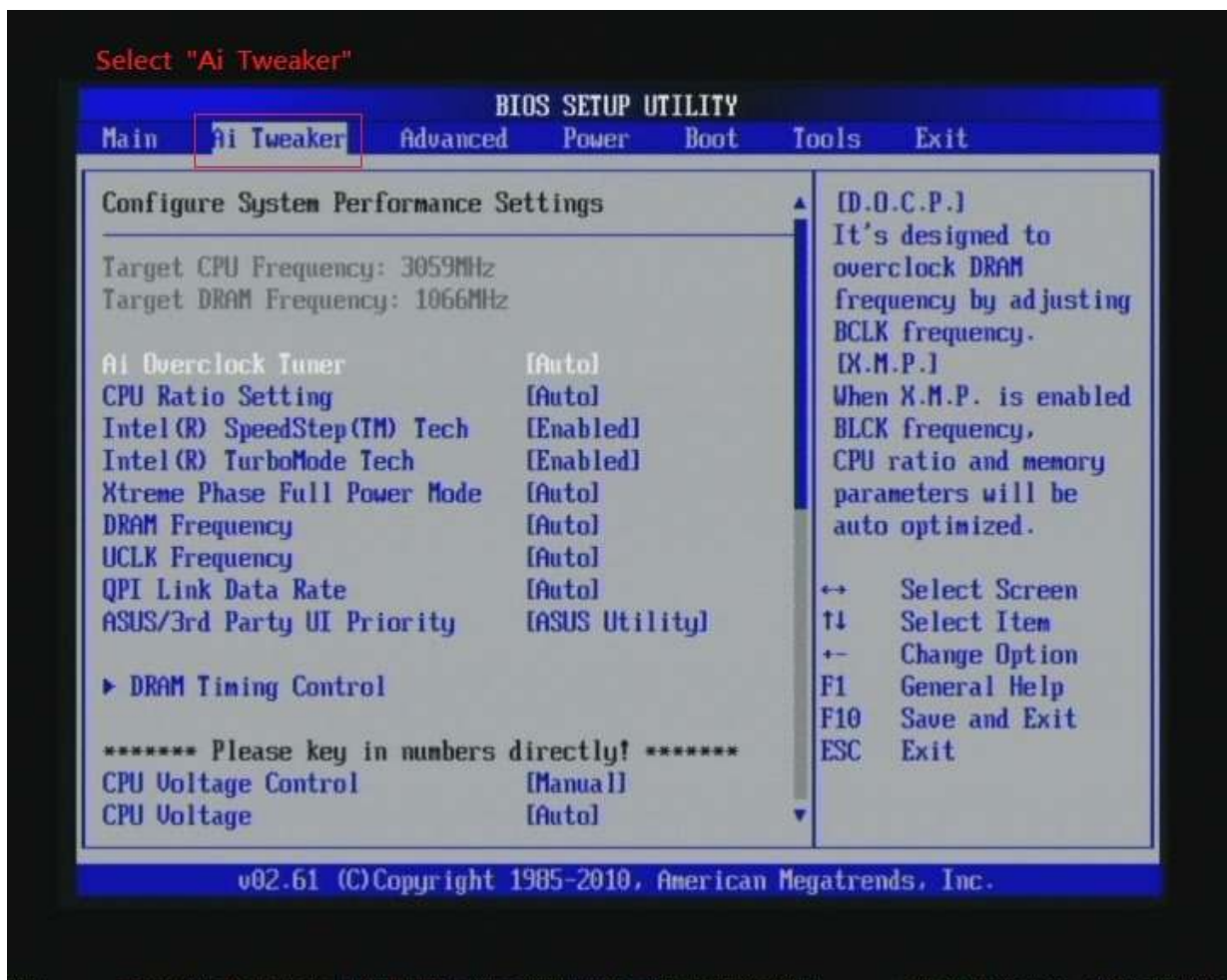
Advanced Overclocking and Testing

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

Step 1 ~ Sep 2 : Ai Overclock Tuner

=> [Manual]



3. Select [BLCK Frequency] item , and increase to higher Base clock rate (ex:144). Then select [DRAM Frequency] item , and set the DDR3 memory to higher clock rate (ex:DDR3-2020). Don't forget setting [CPU Ratio Setting] item to suitable ratio [ex:21]

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



4. Enter [DRAM Timing Control] item



5. set [DRAM CAS# Latency] item to [8 DRAM Clock]

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

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

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

set [DRAM Timing Mode] item to [1N]

then return to previous to [Ai Overclock Tuner] menu

Step 1: DRAM CAS# Latency Set [8]
DRAM RAS# to CAS# Delay Set [9]
DRAM RAS# PRE Time Set [8]

BIOS SETUP UTILITY
AI Tweaker

DRAM Timing Control

1st Information : 8-9-8-27-6-98-14-8-28-0

DRAM CAS# Latency	[18 DRAM Clock]
DRAM RAS# to CAS# Delay	[9 DRAM Clock]
DRAM RAS# PRE Time	[8 DRAM Clock]
DRAM RAS# ACT Time	[127 DRAM Clock]
DRAM RAS# to RAS# Delay	[Auto]
DRAM REF Cycle Time	[Auto]
DRAM WRITE Recovery Time	[Auto]
DRAM READ to PRE Time	[Auto]
DRAM FOUR ACT WIN Time	[Auto]
DRAM Back-To-Back CAS# Delay	[Auto]

2nd Information : 1N-60-63-65

DRAM Timing Mode	[1N]
DRAM Round Trip Latency on CHA	[Auto]
DRAM Round Trip Latency on CHB	[Auto]
DRAM Round Trip Latency on CHC	[Auto]

3rd Information : 7-7-19-9-9-9-7-6-4-7-7-4

DRAM WRITE To READ Delay (DD)	[Auto]
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1N :
It might accelerate
DRAM performance.
2N or 3N :
It might enhance DRAM
overlocking ability.

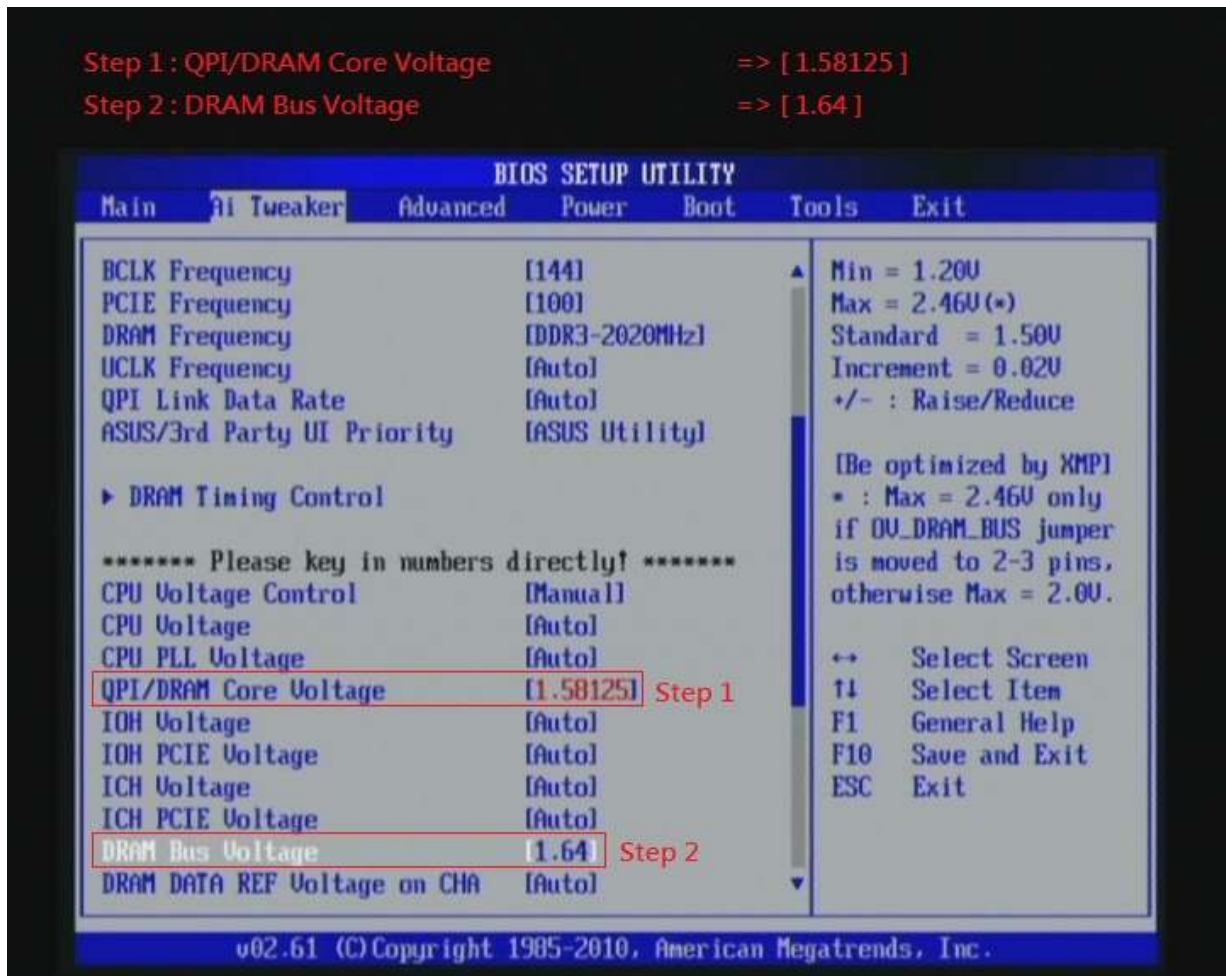
+> Select Screen
T Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit

v02.61 (C) Copyright 1985-2010, American Megatrends, Inc.

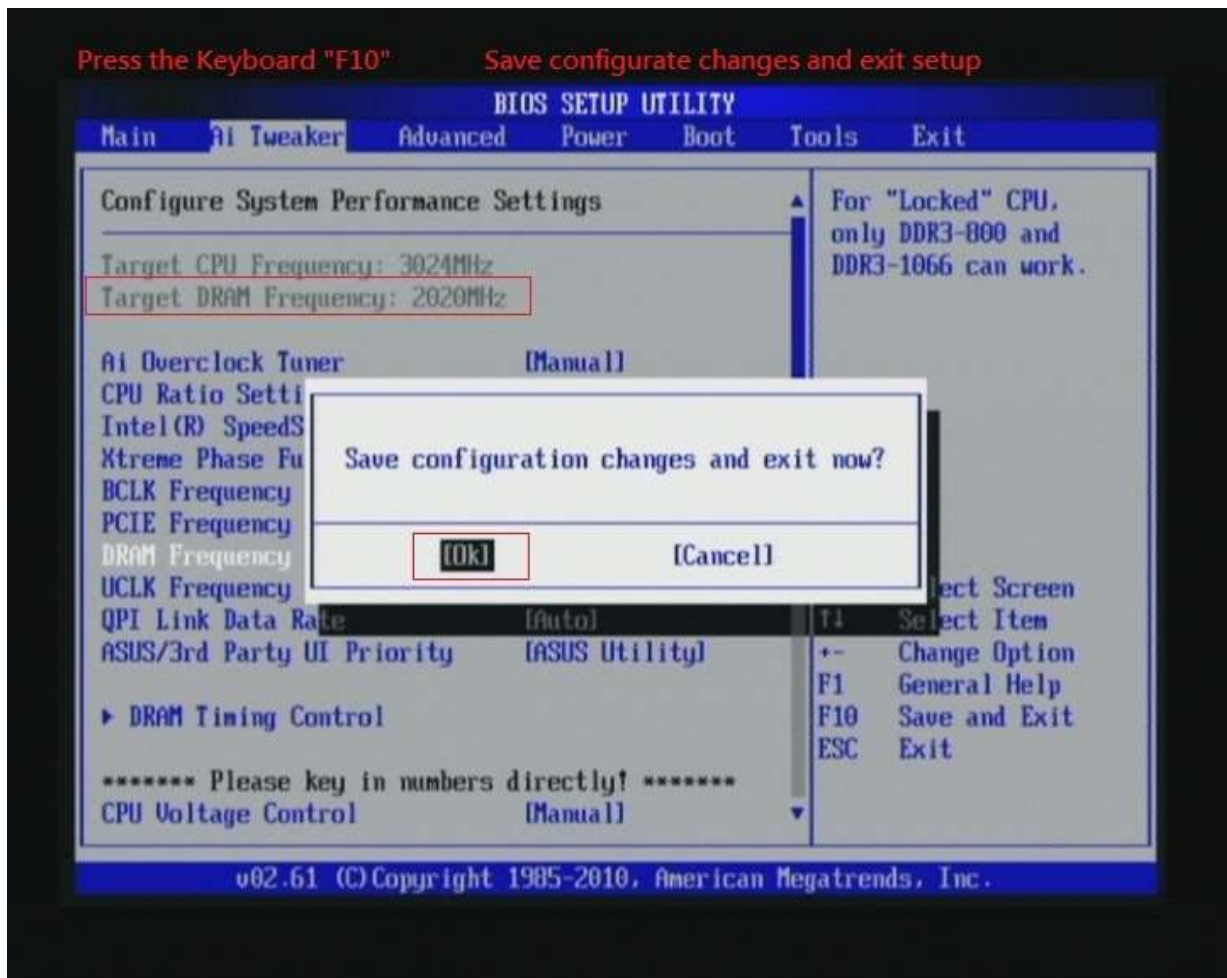
DRAM RAS ACT Time Set [27]
Step 2: DRAM Timing Mode Set [1N]

6. Select [QPI/DRAM Core Voltage] item , and set the value to [1.58125].

Select[DRAM Bus Voltage] item , and set the value to [1.64]



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 : $1007.5 * 2 = 2015$, timing : 8, 9, 8, 27, multi-core test => pass!)

The image displays eight instances of the MemTest86 application. Each window shows a test configuration with 700 megabytes of RAM. The results for each instance are as follows:

- Top-left: 123.2% Coverage, 0 Errors
- Top-right: 122.5% Coverage, 0 Errors
- Second row, left: 122.2% Coverage, 0 Errors
- Second row, right: 117.7% Coverage, 0 Errors
- Third row, left: 120.0% Coverage, 0 Errors
- Third row, right: 117.4% Coverage, 0 Errors
- Bottom row, left: 117.1% Coverage, 0 Errors
- Bottom row, right: 100.5% Coverage, 0 Errors

CPU-Z Version 1.56

Processor: Intel Core i7 950 (Bloomfield, 45 nm, 1.208 V, 3.07 GHz)

Core Speed	3022.4 MHz	Cache	4 x 32 KBytes	8-way
Multiplier	x 21.0	L1 Inst.	4 x 32 KBytes	4-way
Bus Speed	143.9 MHz	Level 2	4 x 256 KBytes	8-way
QPI Link	3454.2 MHz	Level 3	8 MBytes	16-way

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

CPU-Z Version 1.56

Motherboard: ASUSTeK Computer Inc. P6X58D PREMIUM

BIOS: American Megatrends 0813 (Date: 05/25/2010)

Graphic Interface: Version, Link Width: x16, Side Band

CPU-Z Version 1.56

Memory: DDR3, 6144 MBytes, Triple Channels, NB Frequency: 4029.9 MHz

DRAM Frequency	1007.5 MHz
FSB:DRAM	2:14
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)	98 clocks
Command Rate (CR)	1T

CPU-Z Version 1.56

Memory Slot Selection: Slot #1, DDR3, 2048 MBytes

Timings Table	JEDEC #3	JEDEC #1
Frequency	609 MHz	609 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

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記憶體: 5.88 GB

CPU 使用率記錄: [Graph showing 100% usage]

實體記憶體使用記錄: [Graph showing 5.88 GB usage]