

# PRINCO DDR3-1800 user guide and testing for MSI P55A Fuzion Motherboard

CPU i7-875 2.93G

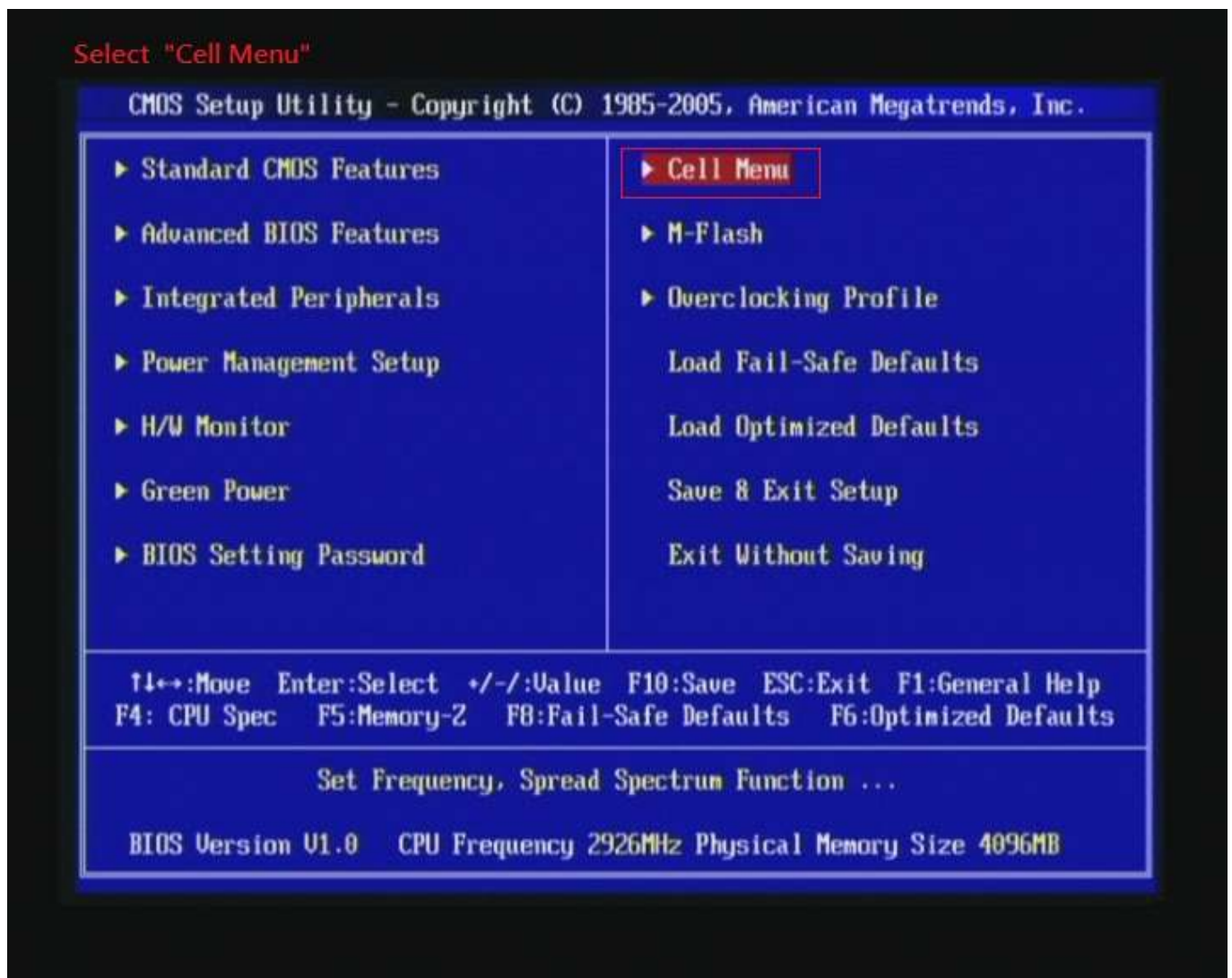


## Part I : Standard test

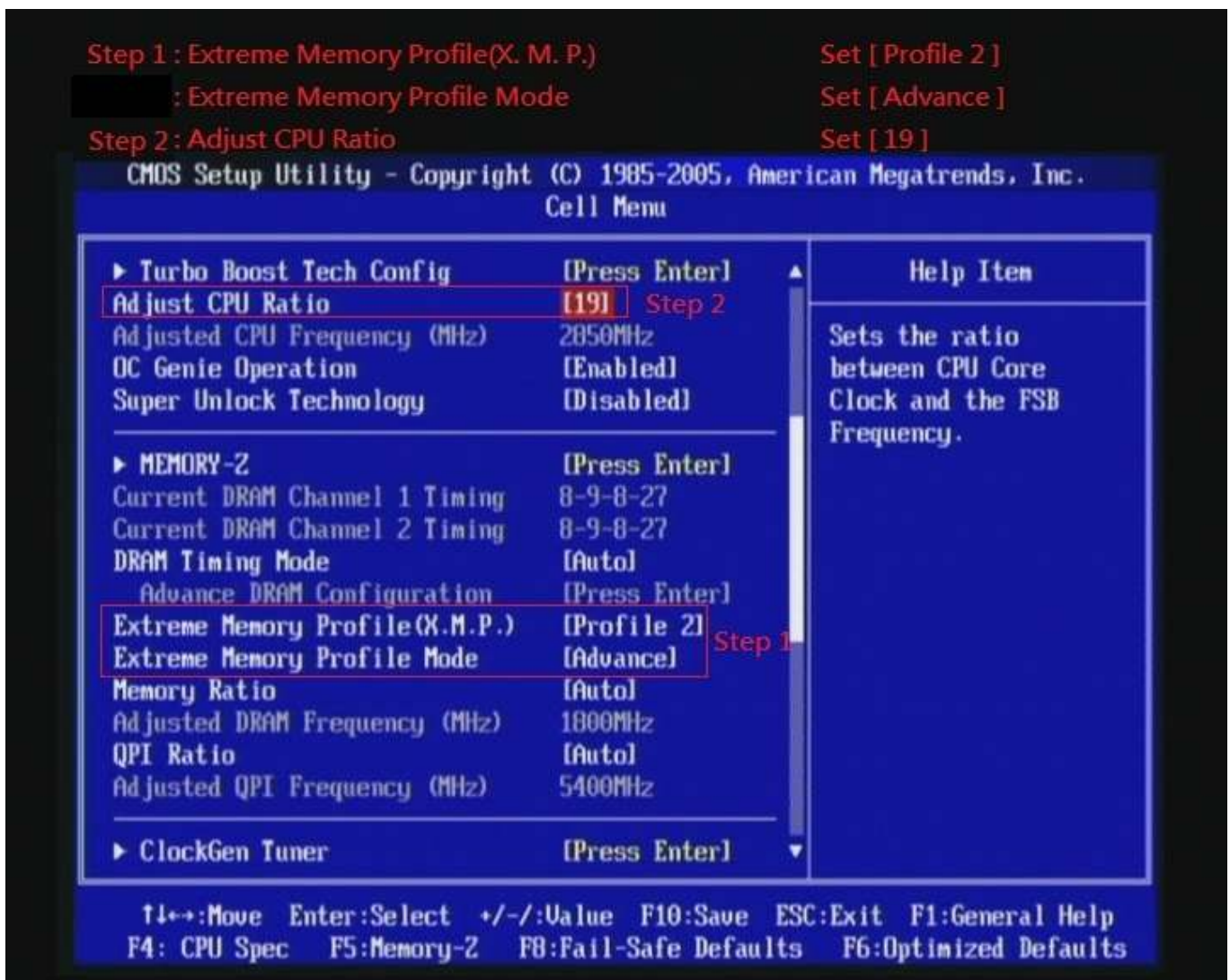
*It's the easiest way to enjoy overclock benefit by  
using PRINCO DDR3-1800 DIMM board*

How to use?

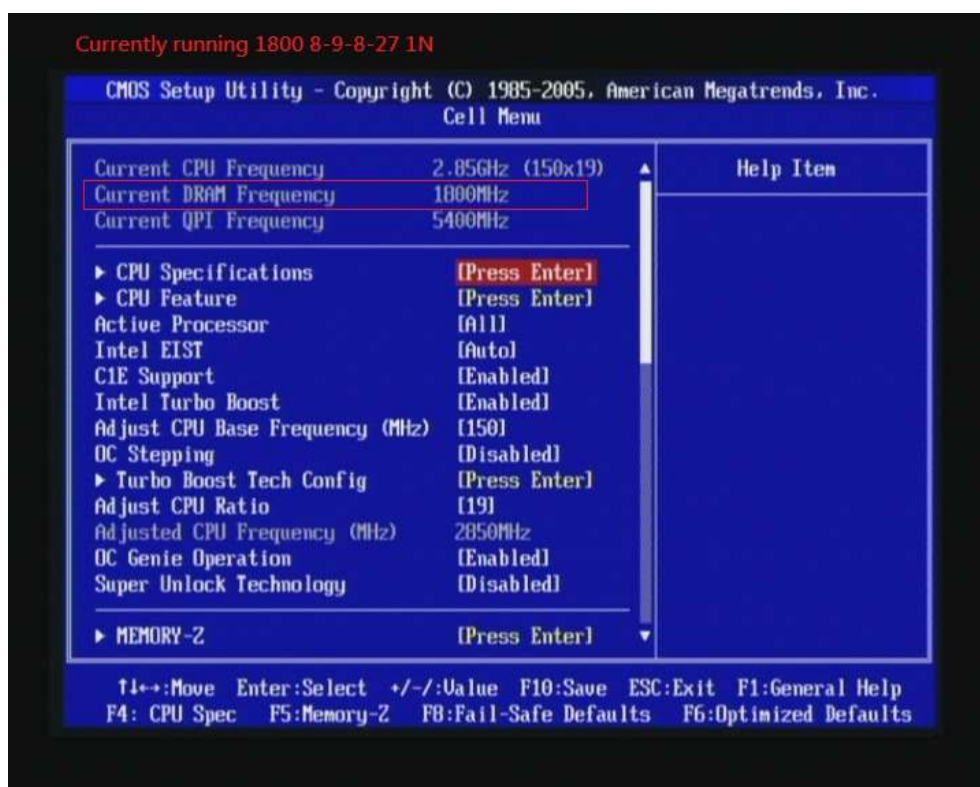
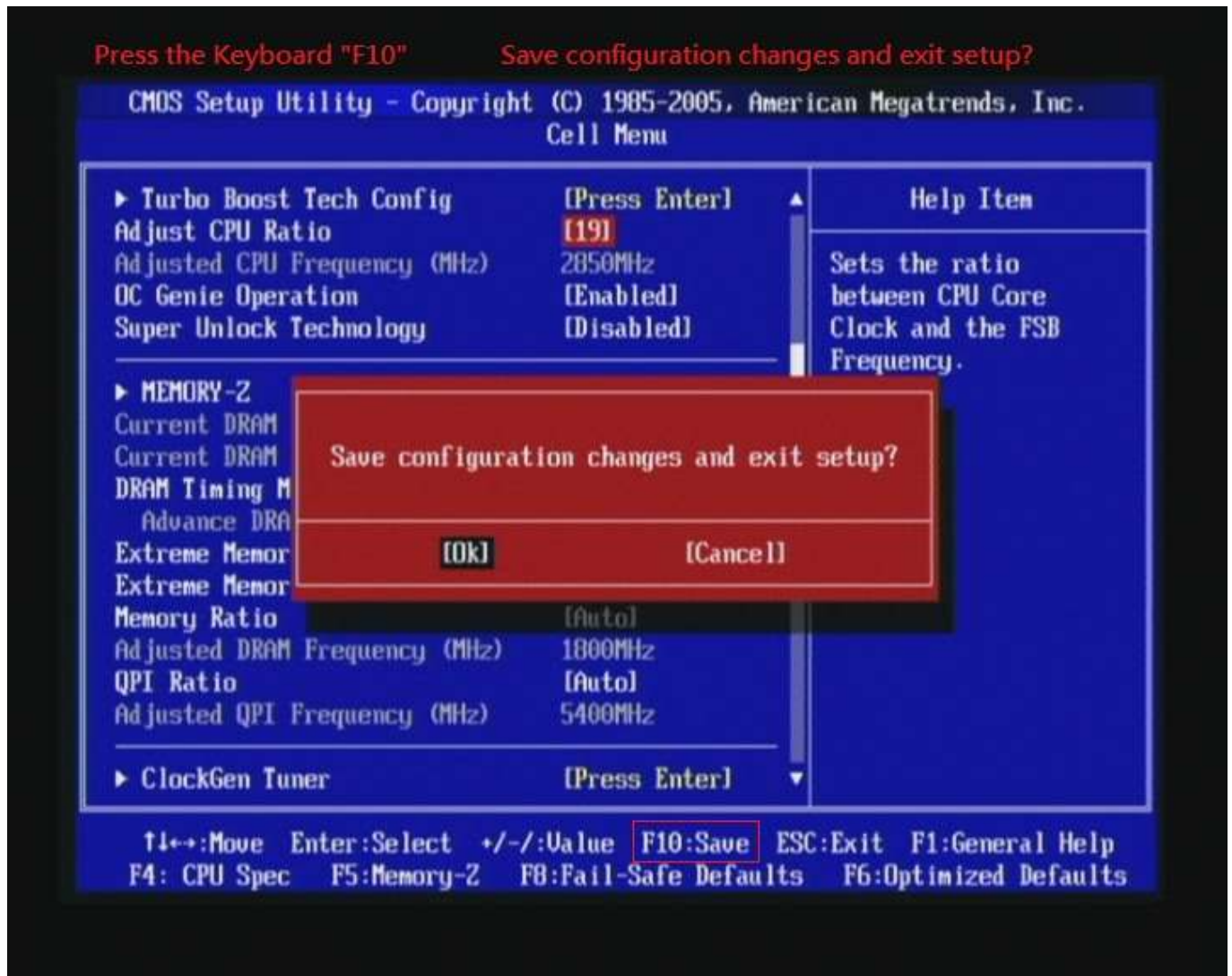
0. Clear BIOS to mainboard initial setting
1. Enter BIOS setup and [Cell Menu] menu



2. 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
3. Set [Extreme Memory Profile Mode] item to [Advance]
4. Set [Adjust CPU Ratio] item to [19]



## 5. 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 :  $903.0 \times 2 = 1806$ , timing : 8, 9, 8, 27, multi-core test => pass!)

The image displays a collage of screenshots from a Windows 7 system. On the left, there are eight instances of the MemTest application, each showing a test run with 430 megabytes of RAM. The results for these tests are: 194.0% Coverage, 0 Errors; 194.0% Coverage, 0 Errors; 193.9% Coverage, 0 Errors; 192.2% Coverage, 0 Errors; 192.0% Coverage, 0 Errors; 191.4% Coverage, 0 Errors; 191.3% Coverage, 0 Errors; and 203.5% Coverage, 0 Errors. Each MemTest window includes a 'Start Testing' button, a 'Stop Testing' button, and an 'About MemTest' button. A note in each window suggests purchasing the PRO (\$5) or Deluxe (\$14) versions for additional features.

On the right, there are four instances of the CPU-Z application. The top two instances show the 'Mainboard' tab, displaying the motherboard manufacturer as MICRO-STAR INTERNATIONAL, model P55A Fuzion (MS-7688), and the BIOS version as V1.0. The bottom two instances show the 'Memory' tab, displaying the memory type as DDR3, size as 4096 MBytes, and the PRINCO-DR3-1800C DIMM board. The 'Timings' section in the bottom-right CPU-Z instance shows a DRAM Frequency of 903.7 MHz, FSB:DRAM of 2:12, CAS# Latency (CL) of 8.0 clocks, RAS# to CAS# Delay (tRCD) of 9 clocks, RAS# Precharge (tRP) of 8 clocks, Cycle Time (tRAS) of 27 clocks, Row Refresh Cycle Time (tRFC) of 88 clocks, and Command Rate (CR) of 1T. The 'Timings Table' also shows JEDEC #3 and JEDEC #4 values for Frequency, CAS# Latency, RAS# to CAS#, RAS# Precharge, tRAS, tRC, and Voltage.

At the bottom, there is a screenshot of the Windows Task Manager 'Performance' tab. It shows the CPU usage at 100% and the memory usage at 3.72 GB. The 'CPU 使用率' section shows a green bar at 100%, and the '記憶體' section shows a green bar at 3.72 GB.

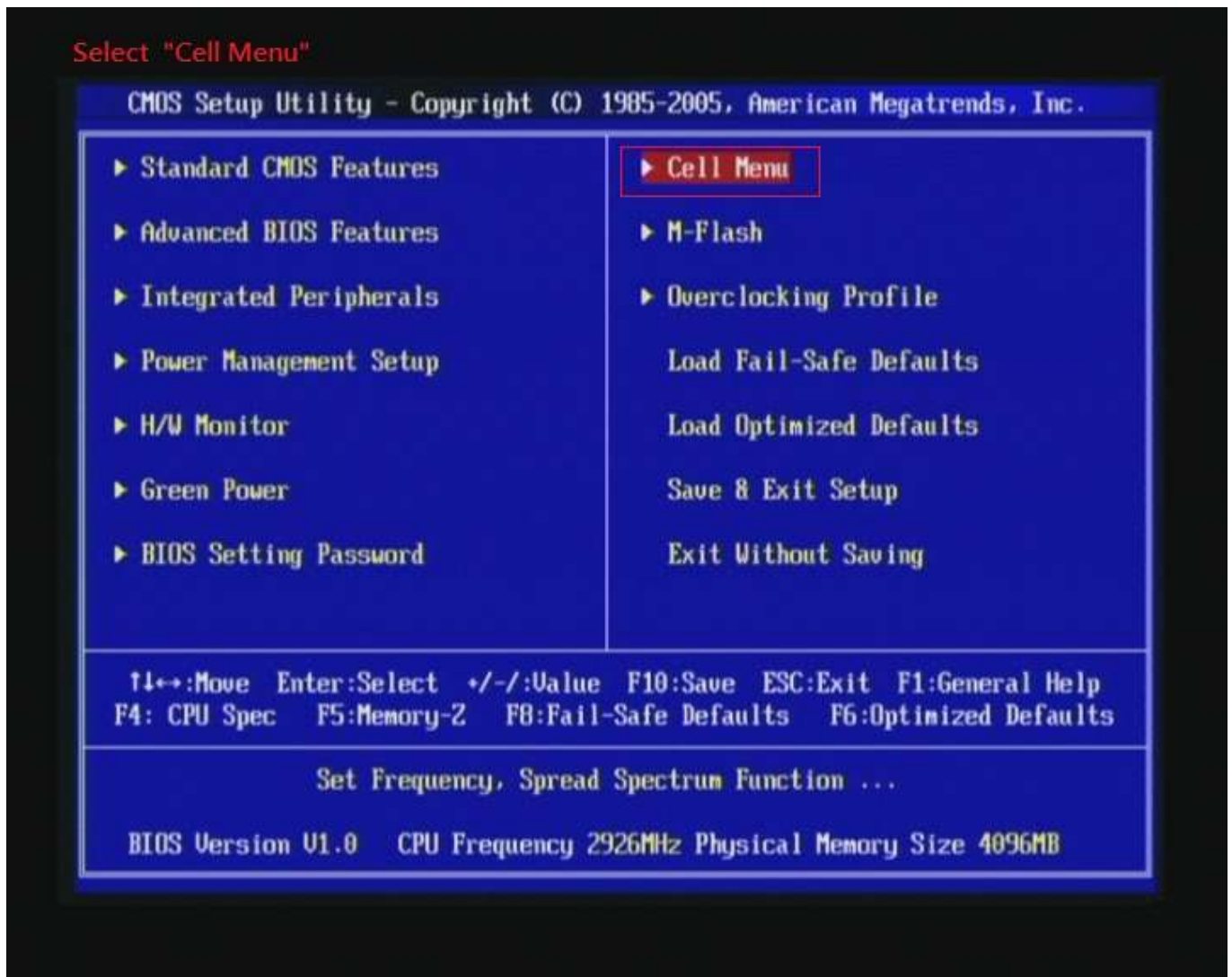
# Advanced Overclocking and Testing

## 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 [Cell Menu] menu



2. Enter [DRAM Timing Mode] item and select Manual

3. Enter [Advance DRAM Configuration] item



4. set [CH1 1T/2T Memory Timing] item to [1]

set [CH1 CAS Latency (CL) ] item to [8]

set [CH1 tRCD] item to [9]

set [CH1 tRP] item to [8]

set [CH1 tRAS] item to [27]

```
Channel 1:  CH1 1T/2T Memory Timing      Set [ 1 ]
            CH1 CAS Latency(CL)         Set [ 8 ]
            CH1 tRCD                      Set [ 9 ]
            CH1 tRP                       Set [ 8 ]
            CH1 tRAS                      Set [27 ]
```

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
Advance DRAM Configuration

===== Channel 1 =====		Help Item
CH1 1T/2T Memory Timing	[ 1 ]	Also called "Command Rate"; the delay cycle between the memory controller start to send signal and the command can be sent to memory IC. Normally, you can select "1" to delay one cycle or "2" to delay two cycles. 1 will run faster but might be more unstable. Please set it depends on memory module.
CH1 CAS Latency(CL)	[ 8 ]	
CH1 tRCD	[ 9 ]	
CH1 tRP	[ 8 ]	
CH1 tRAS	[27]	
CH1 tRFC	[ 74 ]	
CH1 tWR	[10]	
CH1 tWTR	[ 5 ]	
CH1 tRRD	[ 4 ]	
CH1 tRTP	[ 4 ]	
CH1 tFAW	[20]	
CH1 B2B-CAS Delay	[ 0 ]	
Current CH1 tdrRdTRd	6	
Current CH1 tddRdTRd	7	
Current CH1 tsrRdTWr	10	
Current CH1 tdrRdTWr	10	
Current CH1 tddRdTWr	10	

↑↓←→:Move Enter:Select +/-/:Ualue F10:Save ESC:Exit F1:General Help  
F4: CPU Spec F5:Memory-2 F8:Fail-Safe Defaults F6:Optimized Defaults



5. set [CH2 1T/2T Memory Timing] item to [1]

set [CH2 CAS Latency (CL) ] item to [8]

set [CH2 tRCD] item to [9]

set [CH2 tRP] item to [8]

set [CH2 tRAS] item to [27]

```
Channel 2 : CH2 1T/2T Memory Timing      Set [ 1 ]
            CH2 CAS Latency(CL)          Set [ 8 ]
            CH2 tRCD                      Set [ 9 ]
            CH2 tRP                       Set [ 8 ]
            CH2 tRAS                      Set [ 27 ]
```

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
Advance DRAM Configuration

Channel 1 Advance Timing [Auto]

==== Channel 2 =====

CH2 1T/2T Memory Timing	[ 1 ]
CH2 CAS Latency(CL)	[ 8 ]
CH2 tRCD	[ 9 ]
CH2 tRP	[ 8 ]
CH2 tRAS	[ 27 ]
CH2 tRFC	[ 74 ]
CH2 tWR	[ 10 ]
CH2 tWTR	[ 5 ]
CH2 tRRD	[ 4 ]
CH2 tRTP	[ 4 ]
CH2 tFAW	[ 20 ]
CH2 B2B-CAS Delay	[ 0 ]
Current CH2 tdrRdTRd	6
Current CH2 tddRdTRd	7
Current CH2 tsrRdTWr	10

Help Item

Also called "Command Rate"; the delay cycle between the memory controller start to send signal and the command can be sent to memory IC. Normally, you can select "1" to delay one cycle or "2" to delay two cycles. 1 will run faster but might be more unstable. Please set it depends on memory module.

F1←→:Move Enter:Select +/-:Value F10:Save ESC:Exit F1:General Help  
F4: CPU Spec F5:Memory-2 F8:Fail-Safe Defaults F6:Optimized Defaults

6. Select [Adjust CPU Base Frequency (MHz) ] item , and increase to higher Base clock rate (ex:171). Then set [Memory Ratio] item to [6]. Don't forget setting [CPU Ratio Setting] item to suitable ratio [ex:17]

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

Step 1 : Memory Ratio

Set [ 6 ]

Step 2 : Adjust CPU Base Frequency (MHz)

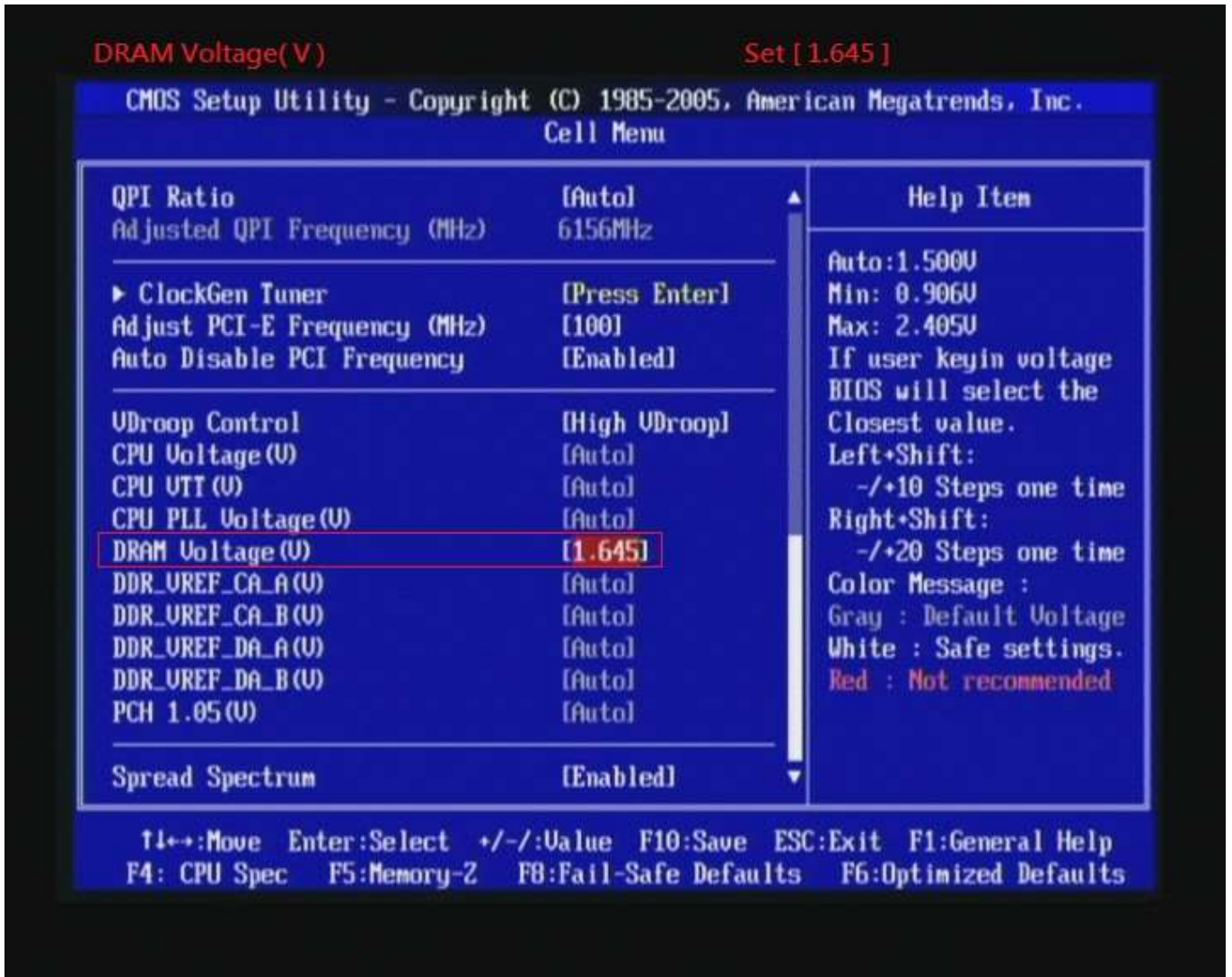
Set [ 171 ]

Step 3 : Adjust CPU Ratio

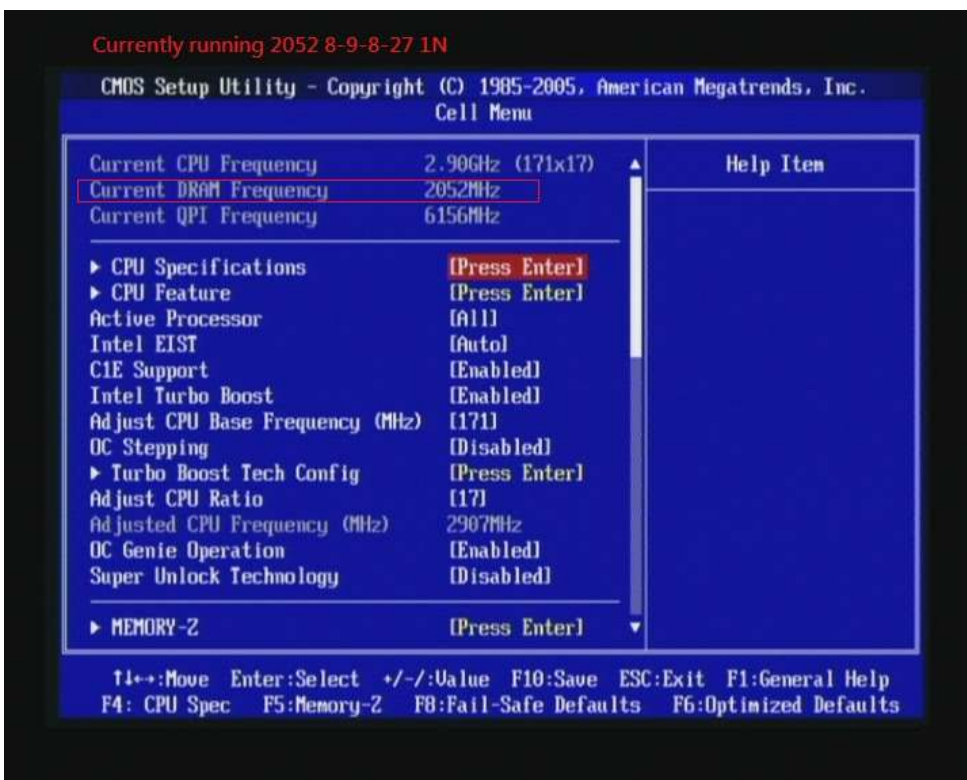
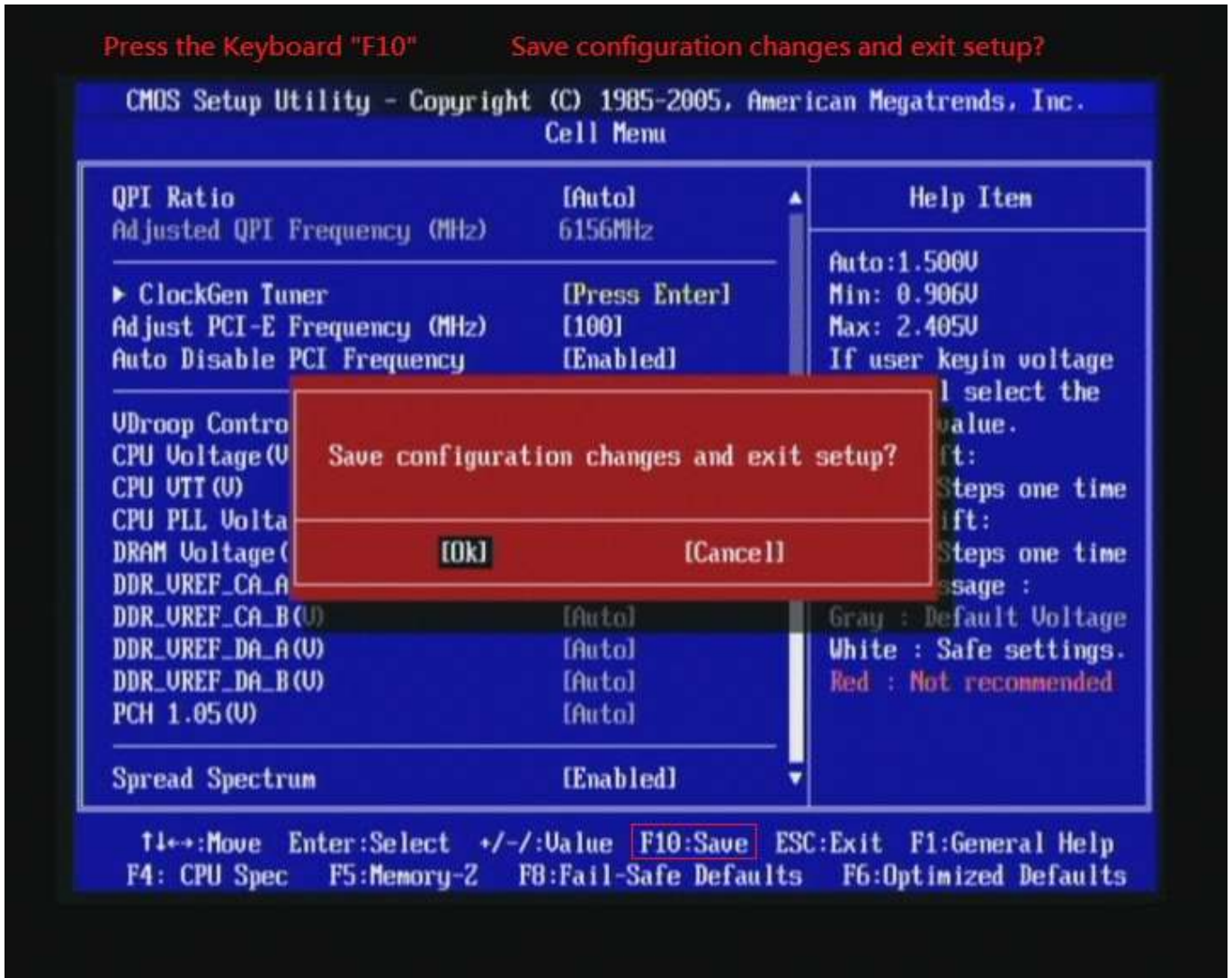
Set [ 17 ]



7. Select[DRAM Voltage(V) ] item , and set the value to [1.645].



## 8. 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 :  $1029.4 * 2 = 2058$ , timing : 8, 9, 8, 27, multi-core test => pass!)

Enter megabytes of RAM to test: 430

Start Testing Stop Testing

About MemTest

If you find the free version useful, please considering purchasing the PRO (\$5) or Deluxe (\$14) versions, which add additional features.

[N] 202.0% Coverage, 0 Errors

Enter megabytes of RAM to test: 430

Start Testing Stop Testing

About MemTest

If you find the free version useful, please considering purchasing the PRO (\$5) or Deluxe (\$14) versions, which add additional features.

[N] 192.7% Coverage, 0 Errors

Enter megabytes of RAM to test: 430

Start Testing Stop Testing

About MemTest

If you find the free version useful, please considering purchasing the PRO (\$5) or Deluxe (\$14) versions, which add additional features.

[N] 196.8% Coverage, 0 Errors

Enter megabytes of RAM to test: 430

Start Testing Stop Testing

About MemTest

If you find the free version useful, please considering purchasing the PRO (\$5) or Deluxe (\$14) versions, which add additional features.

[N] 191.0% Coverage, 0 Errors

Enter megabytes of RAM to test: 430

Start Testing Stop Testing

About MemTest

If you find the free version useful, please considering purchasing the PRO (\$5) or Deluxe (\$14) versions, which add additional features.

[N] 196.9% Coverage, 0 Errors

Enter megabytes of RAM to test: 430

Start Testing Stop Testing

About MemTest

If you find the free version useful, please considering purchasing the PRO (\$5) or Deluxe (\$14) versions, which add additional features.

[N] 191.1% Coverage, 0 Errors

Enter megabytes of RAM to test: 430

Start Testing Stop Testing

About MemTest

If you find the free version useful, please considering purchasing the PRO (\$5) or Deluxe (\$14) versions, which add additional features.

[N] 195.2% Coverage, 0 Errors

Enter megabytes of RAM to test: All unused RAM

Start Testing Stop Testing

About MemTest

If you find the free version useful, please considering purchasing the PRO (\$5) or Deluxe (\$14) versions, which add additional features.

[N] 203.8% Coverage, 0 Errors

**CPU-Z** Version 1.56

CPU | Caches | Mainboard | Memory | SPD | Graphics | About

Processor

Name	Intel Core i7 875K		
Code Name	Lynnfield	Brand ID	
Package	Socket 1156 LGA		
Technology	45 nm	Core Voltage	1.376 V
Specification	Intel(R) Core(TM) i7 CPU K 875 @ 2.93GHz		
Family	6	Model	E
Ext. Family	6	Ext. Model	1E
Stepping	5	Revision	B1
Instructions	MMX, SSE (1, 2, 3, 3S, 4.1, 4.2), EM64T, VT-x		

Clocks (Core #0)

Core Speed	4117.6 MHz
Multiplier	x 24.0
Bus Speed	171.6 MHz
QPI Link	3088.2 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: 8

Validate OK

**CPU-Z** Version 1.56

CPU | Caches | Mainboard | Memory

Motherboard

Manufacturer	MICRO-STAR INTERNATIONAL
Model	P55A Fuzion (MS-7700)
Chipset	Intel
Southbridge	Intel
LPICIO	Fintek

BIOS

Brand	American Megatrends
Version	V1.0
Date	07/06/2010

Graphic Interface

Link Width	x16
Side Band	

Validate OK

**CPU-Z** Version 1.56

CPU | Caches | Mainboard | Memory | SPD | Graphics | About

General

Type	DDR3	Channels #	Dual
Size	4096 MBytes	DC Mode	
		NB Frequency	3088.2 MHz

Timings

DRAM Frequency	1029.4 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)	74 clocks
Command Rate (CR)	1T
DRAM Idle Timer	
Total CAS# (tRDRAM)	
Row To Column (tRCD)	

Validate OK

**CPU-Z** Version 1.56

CPU | Caches | Mainboard | Memory

Memory Slot Selection

Slot #1	DDR3
Module Size	2048 MB
Max Bandwidth	PC3-10700 (8000)
Manufacturer	
Part Number	PRINCO-DR3-1800
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

Validate OK

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: 3.70 GB

CPU 使用率記錄

實體記憶體使用記錄