

PRINCO DDR3-1600 user guide and testing for MSI P55A Fuzion Motherboard

CPU i7-875 2.93G

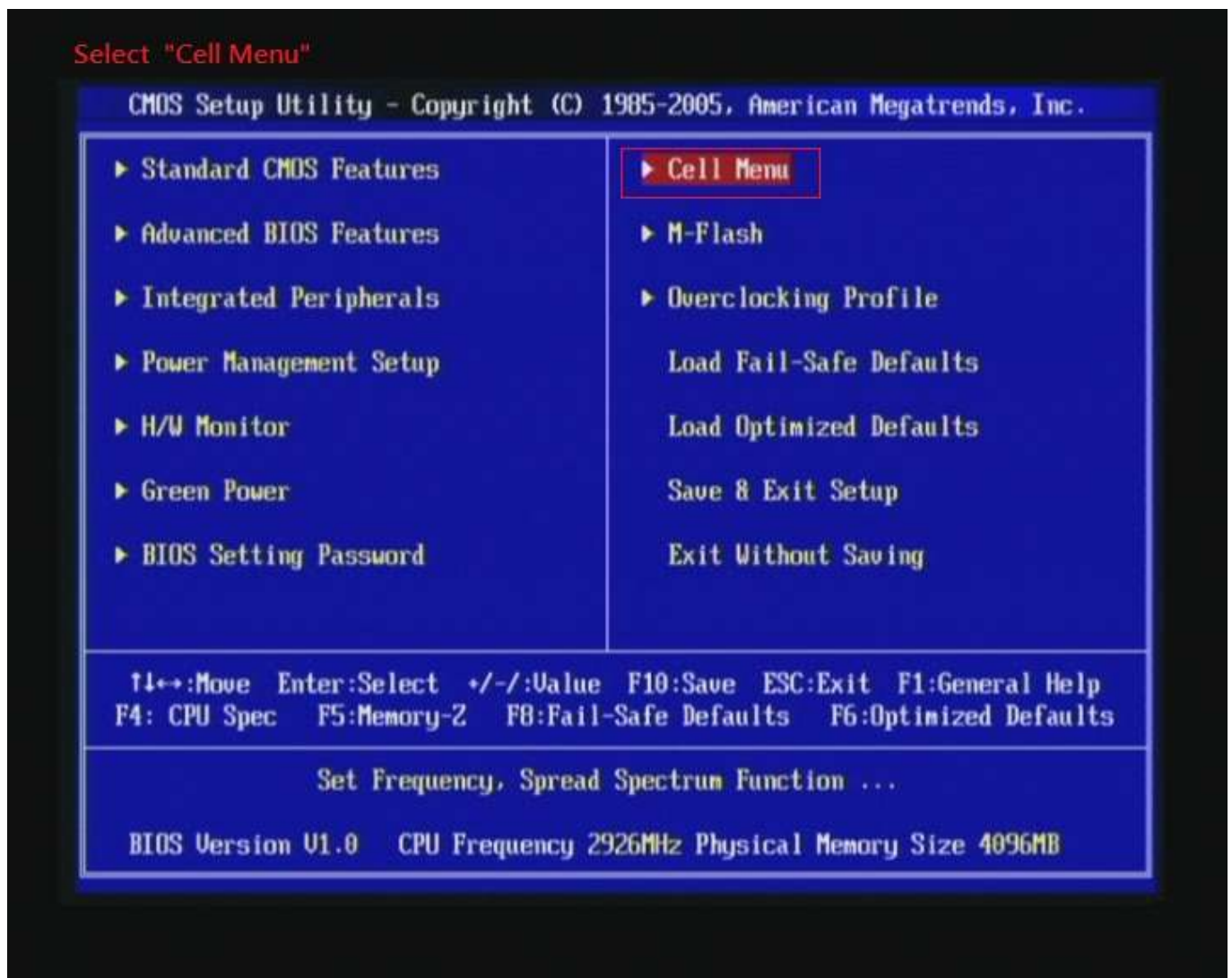


Part I : Standard test

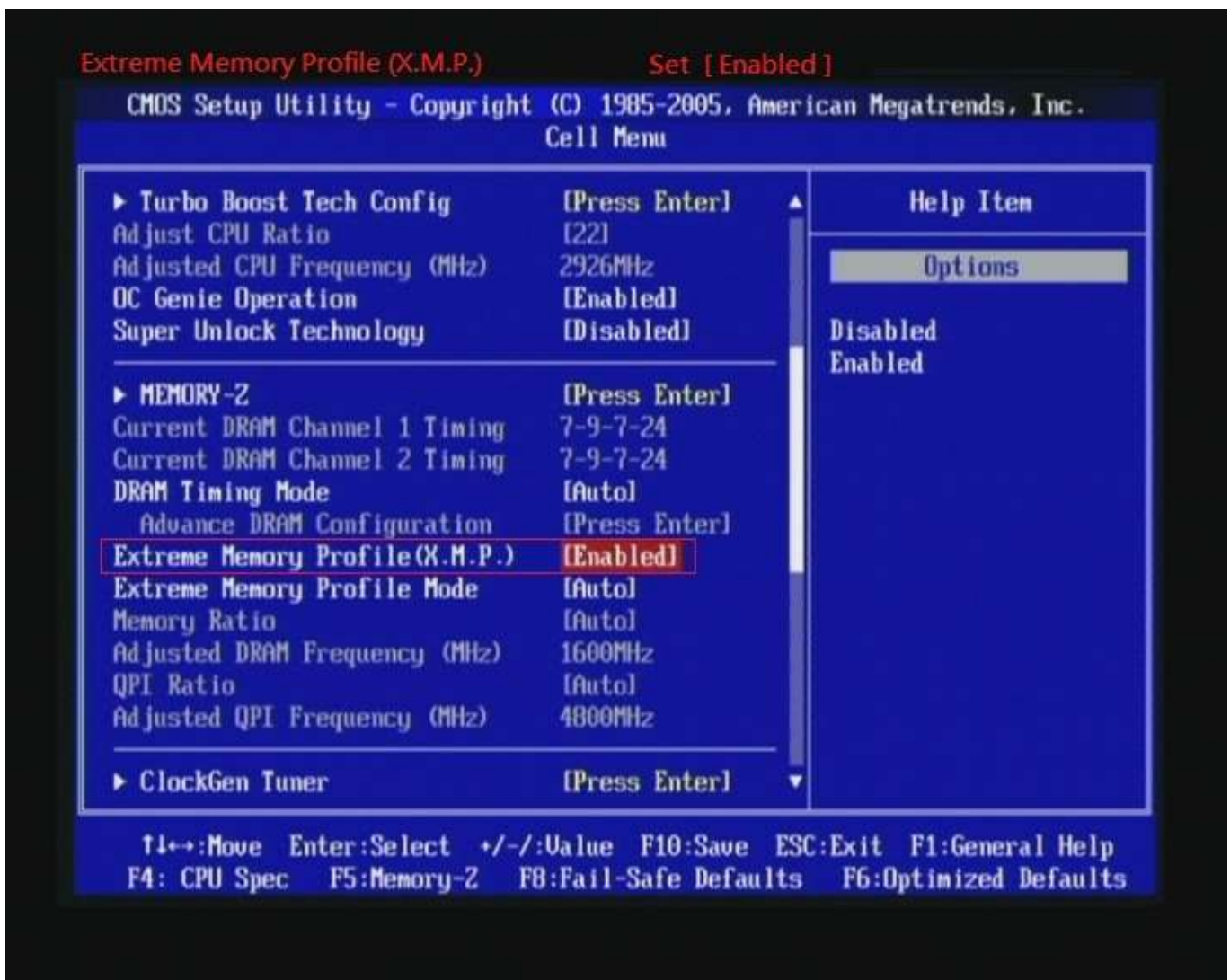
*It's the easiest way to enjoy overclock benefit by
using PRINCO DDR3-1600 DIMM board*

How to use?

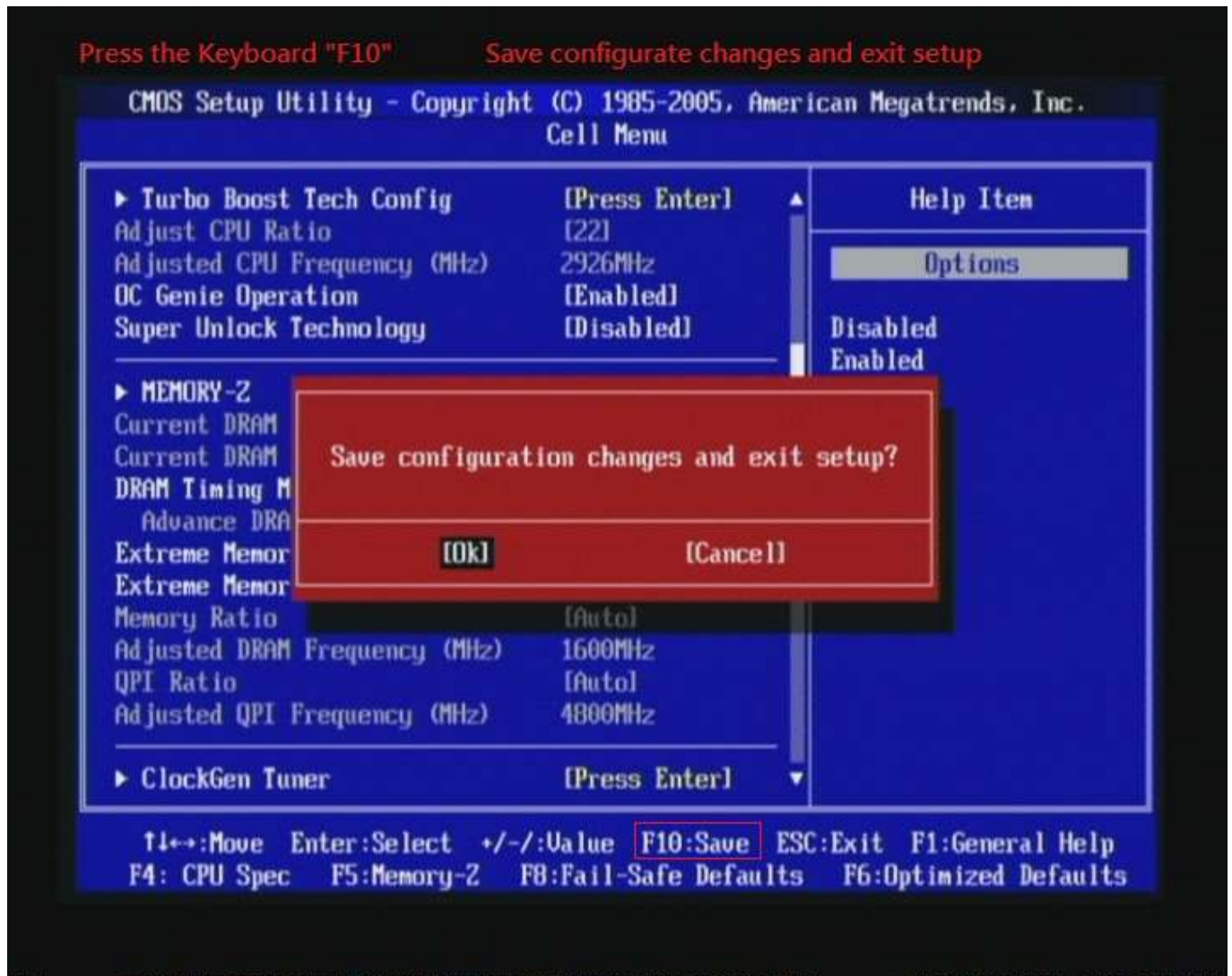
0. Clear BIOS to mainboard initial setting
1. Enter BIOS setup and [Cell Menu] menu



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



4. Save BIOS changes [F10] and exit



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 : $802.0 \times 2 = 1604$, timing : 7, 9, 7, 24, multi-core test => pass!)

The screenshot displays a Windows 7 desktop environment with several windows open. On the left, there are eight instances of MemTest86 running in parallel. Each window shows a progress bar and coverage percentage, all indicating 0 errors and high coverage (ranging from 184.1% to 243.3%). The CPU-Z windows provide detailed system information:

- CPU-Z Processor:** Intel Core i7 875K, Lynnfield, Socket 1156 LGA, 45 nm, Core Voltage 1.168 V. Specification: Intel(R) Core(TM) i7 CPU K 875 @ 2.93GHz. 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 3207.8 MHz, Multiplier x 24.0, Bus Speed 133.7 MHz, QPI Link 2405.9 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.
- Memory (CPU-Z):** Type DDR3, Size 4096 MBytes, Channels # Dual, DC Mode, NB Frequency 2406.0 MHz.
- Timings (CPU-Z):** DRAM Frequency 802.0 MHz, FSB:DRAM 2:12, 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) 88 clocks, Command Rate (CR) 1T.
- Memory Slot Selection (CPU-Z):** Slot #1 DDR3, Module Size 2048 MBytes, Max Bandwidth PC3-10700 (667 MHz), Manufacturer PRINCO, Part Number PRINCO-DR3-16000.
- Timings Table (CPU-Z):**

	JEDEC #2	JEDEC #1
Frequency	533 MHz	609 MHz
CAS# Latency	7.0	8.0
RAS# to CAS#	7	8
RAS# Precharge	7	8
tRAS	20	22
tRC	27	30
Command Rate		
Voltage	1.50 V	1.50 V

At the bottom, the Windows Task Manager is visible, showing CPU usage at 100% and memory usage at 3.80 GB.

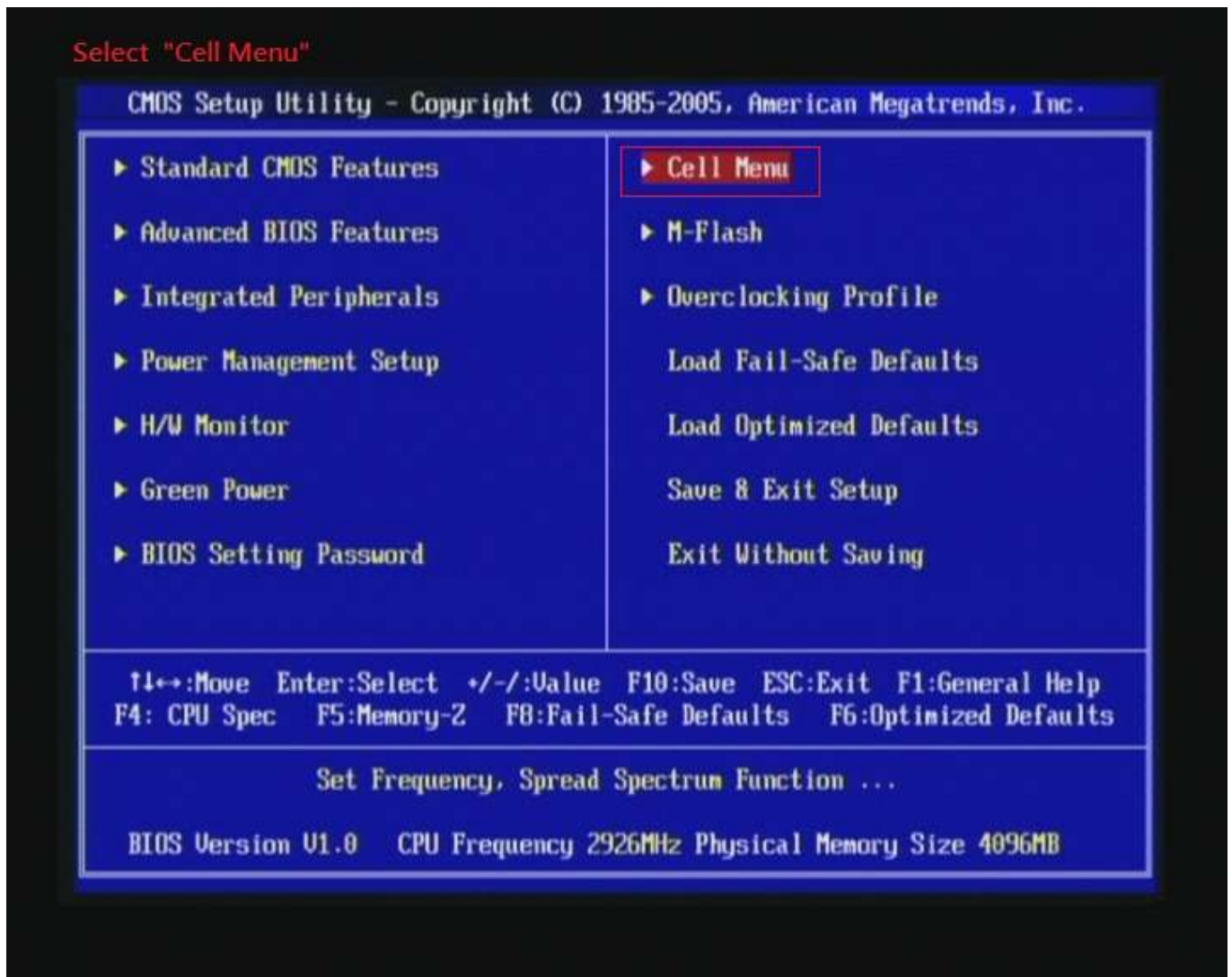
Advanced Overclocking and Testing

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 [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 [7]

set [CH1 tRCD] item to [9]

set [CH1 tRP] item to [7]

set [CH1 tRAS] item to [24]

```
Channel 1:  CH1 1T/2T Memory Timing      Set [ 1 ]
            CH1 CAS Latency(CL)         Set [ 7 ]
            CH1 tRCD                     Set [ 9 ]
            CH1 tRP                      Set [ 7 ]
            CH1 tRAS                     Set [24]
```

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

===== Channel 1 =====		Help Item
CH1 1T/2T Memory Timing	[1]	tRAS is "Timing of Row Address Strobe"; the timing of active to precharge delay between the precharge and activation of row data access. If you set this item smaller, system will run faster but might be more unstable. Please set it depends on memory module.
CH1 CAS Latency(CL)	[7]	
CH1 tRCD	[9]	
CH1 tRP	[7]	
CH1 tRAS	[24]	
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	8	
Current CH1 tdrRdTWr	8	
Current CH1 tddRdTWr	8	

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

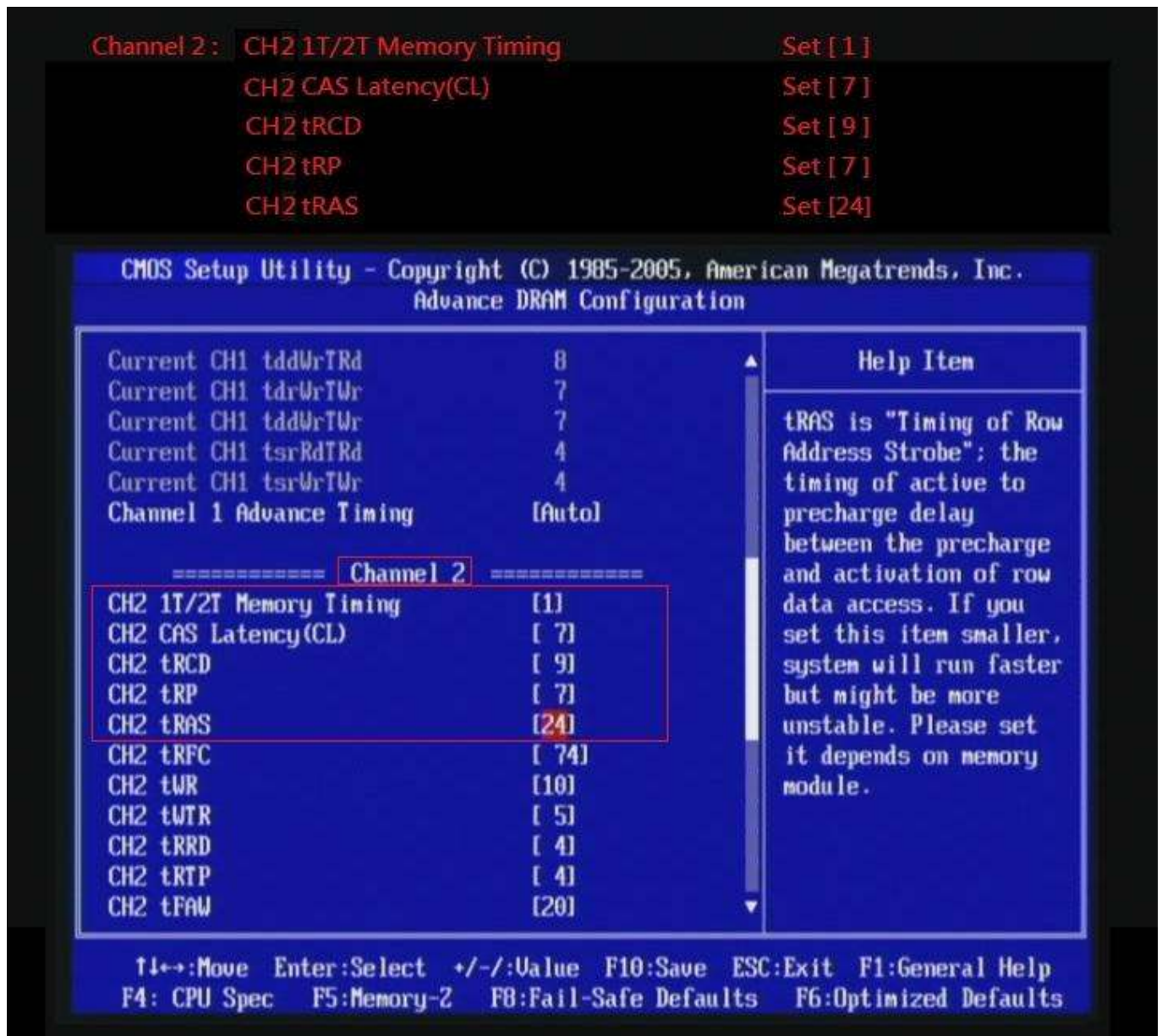
5. set [CH2 1T/2T Memory Timing] item to [1]

set [CH2 CAS Latency (CL)] item to [7]

set [CH2 tRCD] item to [9]

set [CH2 tRP] item to [7]

set [CH2 tRAS] item to [24]



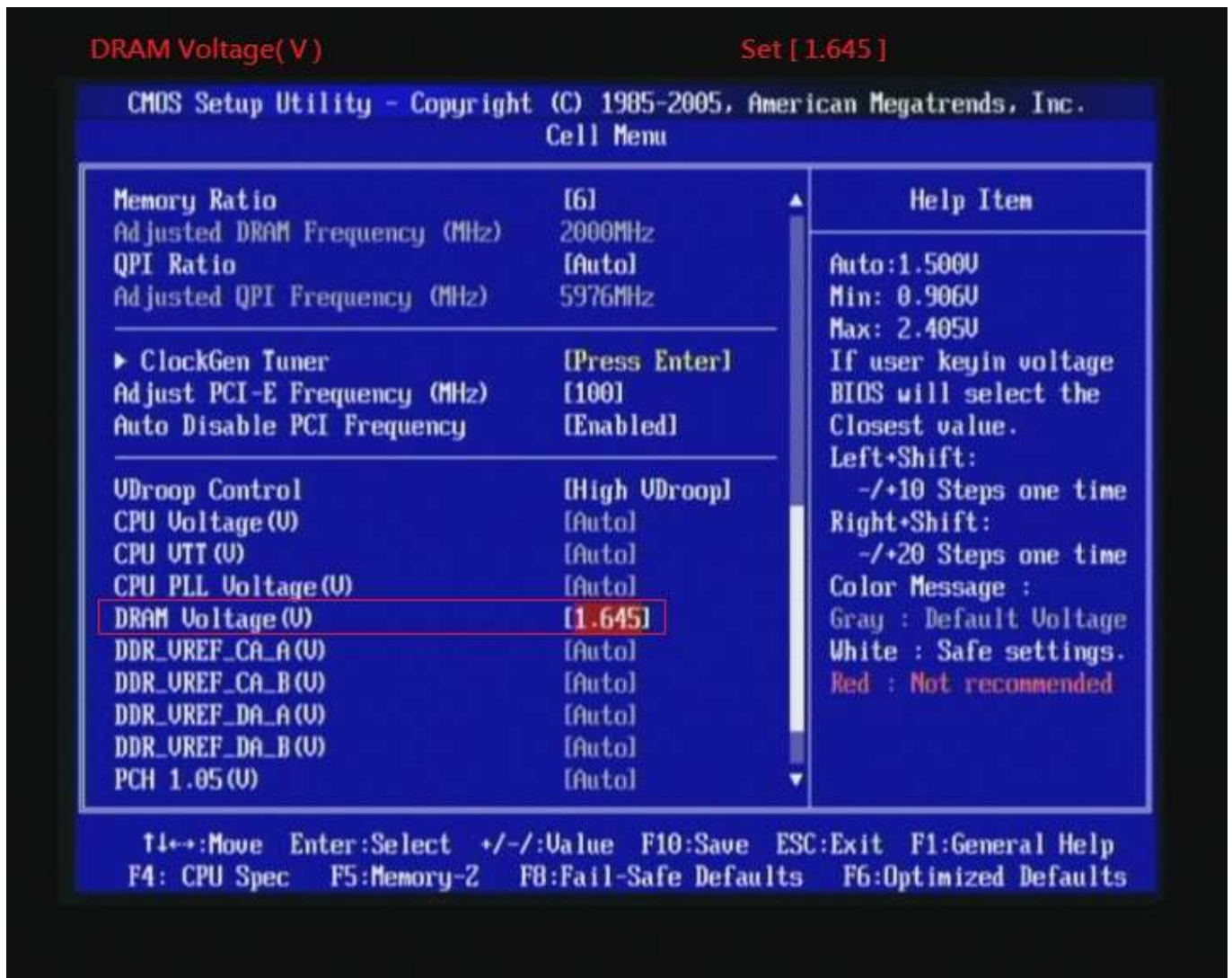
6. Select [Adjust CPU Base Frequency (MHz)] item , and increase to higher Base clock rate (ex:166). Then set [Memory Ratio] item to [6]. Don't forget setting [CPU Ratio Setting] item to suitable ratio [ex:17]

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

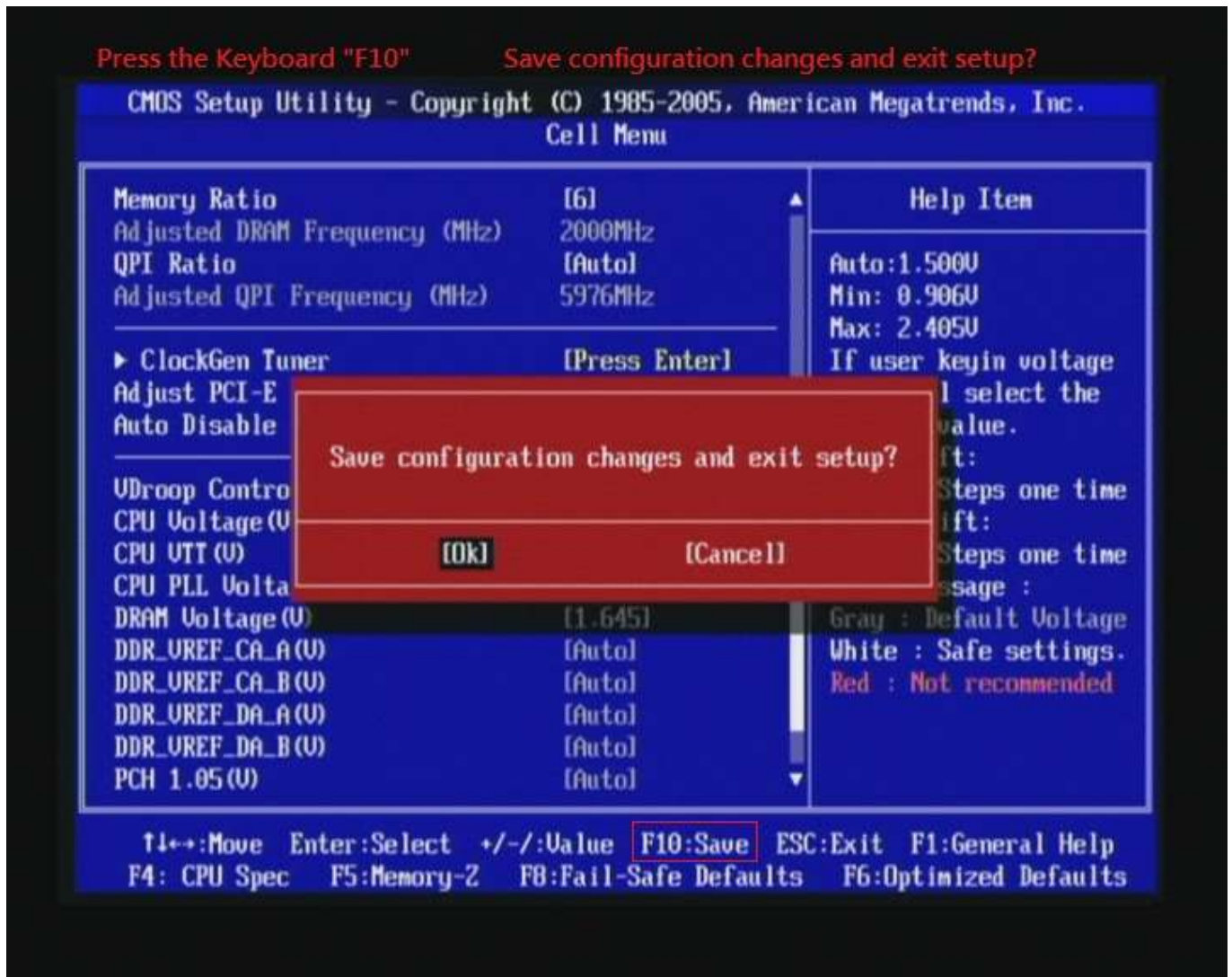
Step 1 : Memory Ratio Set [6]
Step 2 : Adjust CPU Base Frequency (MHz) Set [166]
Step 3 : Adjust CPU Ratio Set [17]



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 DDR3-1600 potential.

(Data rate : $999.5 * 2 = 1999$, timing : 7, 9, 7, 24, multi-core test => pass!)

The image displays a collage of screenshots from a Windows 7 system. On the left, eight instances of MemTest86 are shown, each reporting 0 errors and various coverage percentages: 117.3%, 118.6%, 112.5%, 108.0%, 107.7%, 110.7%, 111.6%, and 108.7%. The MemTest interface includes a text box for RAM size (set to 430 MB), 'Start Testing' and 'Stop Testing' buttons, and an 'About MemTest' link. A note at the bottom of each window suggests purchasing the PRO or Deluxe versions for additional features.

On the right, four instances of CPU-Z are shown. The top instance provides processor details for an Intel Core i7 875K (Lynnfield) running at 2.93GHz. The middle instance shows memory details for DDR3-1600 (4096 MB) in dual channel mode, with a DRAM frequency of 999.5 MHz and various timing parameters. The bottom instance shows the Windows Task Manager (Windows 工作管理員) with CPU usage at 100% and memory usage at 3.72 GB.

Property	Value
Name	Intel Core i7 875K
Code Name	Lynnfield
Package	Socket 1156 LGA
Technology	45 nm
Core Voltage	1.312 V
Specification	Intel(R) Core(TM) i7 CPU K 875 @ 2.93GHz
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

Property	Value
Type	DDR3
Size	4096 MBytes
Channels #	Dual
DC Mode	
NB Frequency	2998.6 MHz

Parameter	Value
DRAM Frequency	999.5 MHz
FSB:DRAM	2:12
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)	88 clocks
Command Rate (CR)	1T

Resource	Usage
CPU 使用率	100 %
記憶體	3.72 GB