

PRINCO DDR3-1800 user guide and testing for MSI H55 GD65 Motherboard

CPU i3-540 3.07G

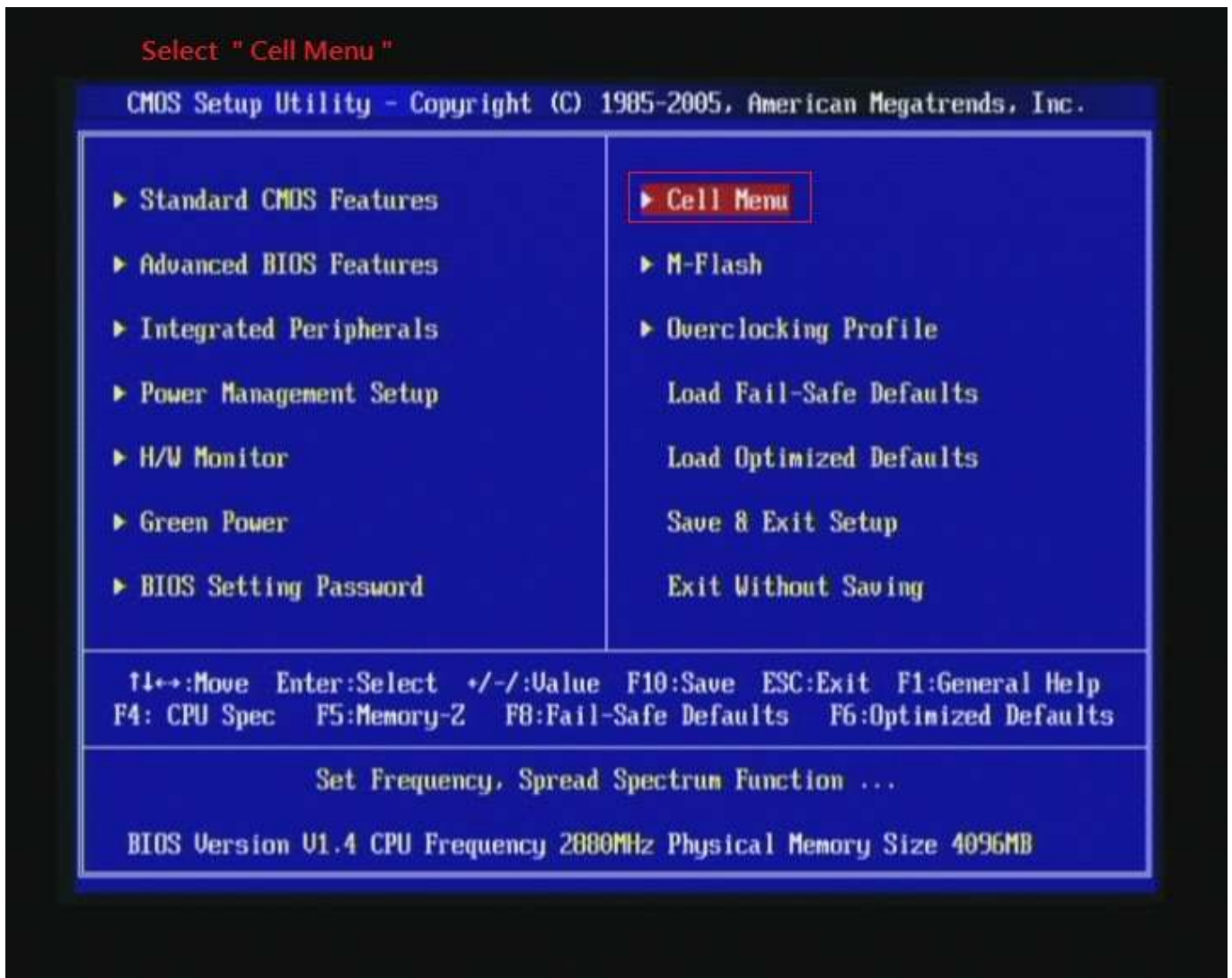


Part I : Standard test

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 [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 [17]

Step 1 : Extreme Memory Profile(X. M. P.)
 Extreme Memory Profile Mode

Set [Profile 2]
 Set [Advance]

Step 2 : QPI Ratio

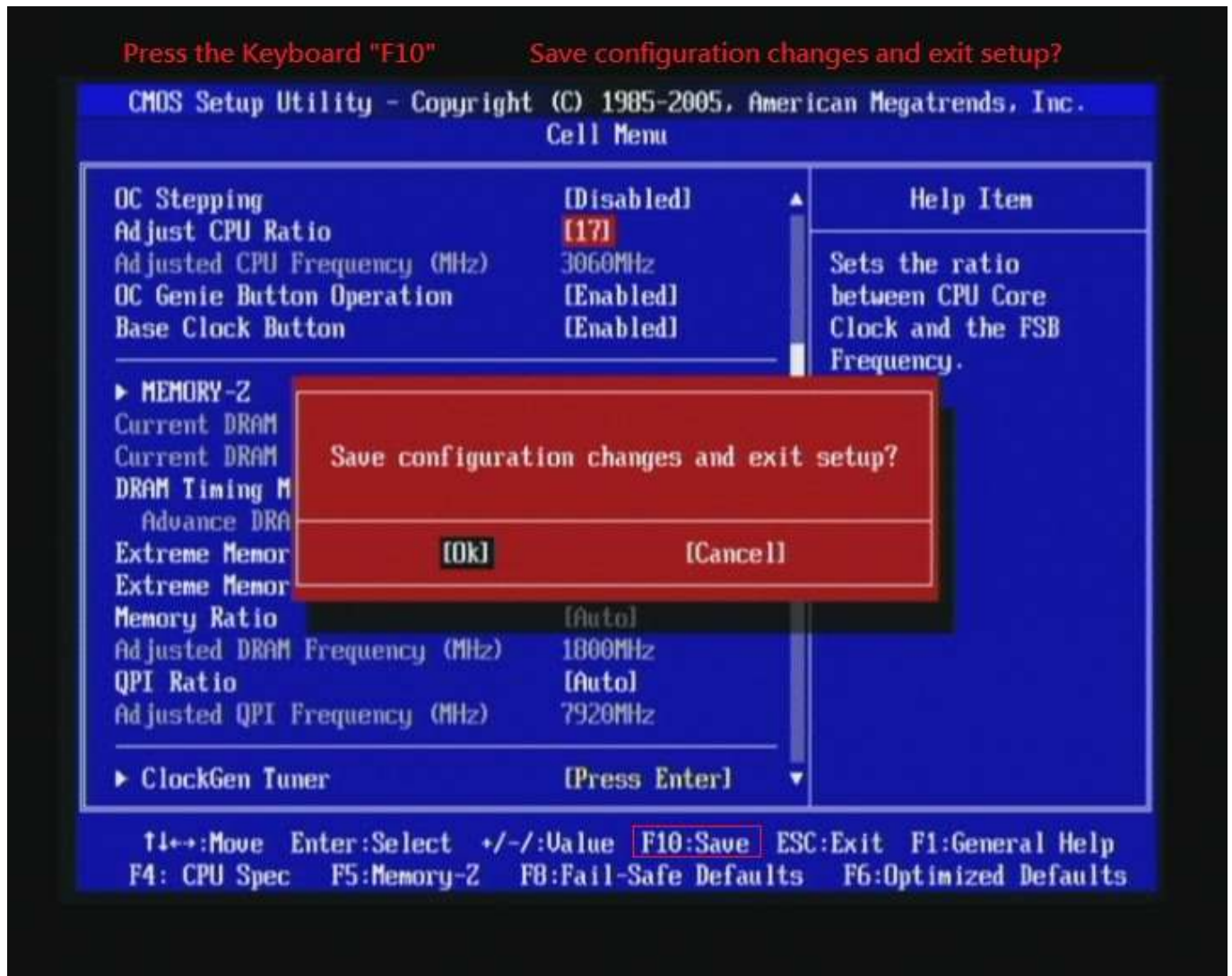
Set [Auto]

Step 3 : Adjust CPU Ratio

Set [17]



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 : $902.8 \times 2 = 1805$, timing : 8, 9, 8, 24, multi-core test => pass!)

The image displays a collage of screenshots from a Windows 7 system. The primary focus is on MemTest86 and CPU-Z. Four MemTest86 windows are shown, all reporting 0 errors and 100% coverage. The CPU-Z windows provide detailed hardware information:

- CPU-Z Processor:** Intel Core i3 540 (Clarkdale), Socket 1156 LGA, 32 nm technology, 3.07 GHz.
- CPU-Z Caches:** 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).
- CPU-Z Memory:** DDR3, 4096 MBytes, Dual channels, 2889.0 MHz NB Frequency.
- CPU-Z Timings:** DRAM Frequency: 902.8 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.

At the bottom left, the Windows Task Manager is visible, showing 34 processes, 100% CPU usage, and 92% memory usage. The system tray at the bottom indicates 34 processes, 100% CPU usage, and 92% memory usage.

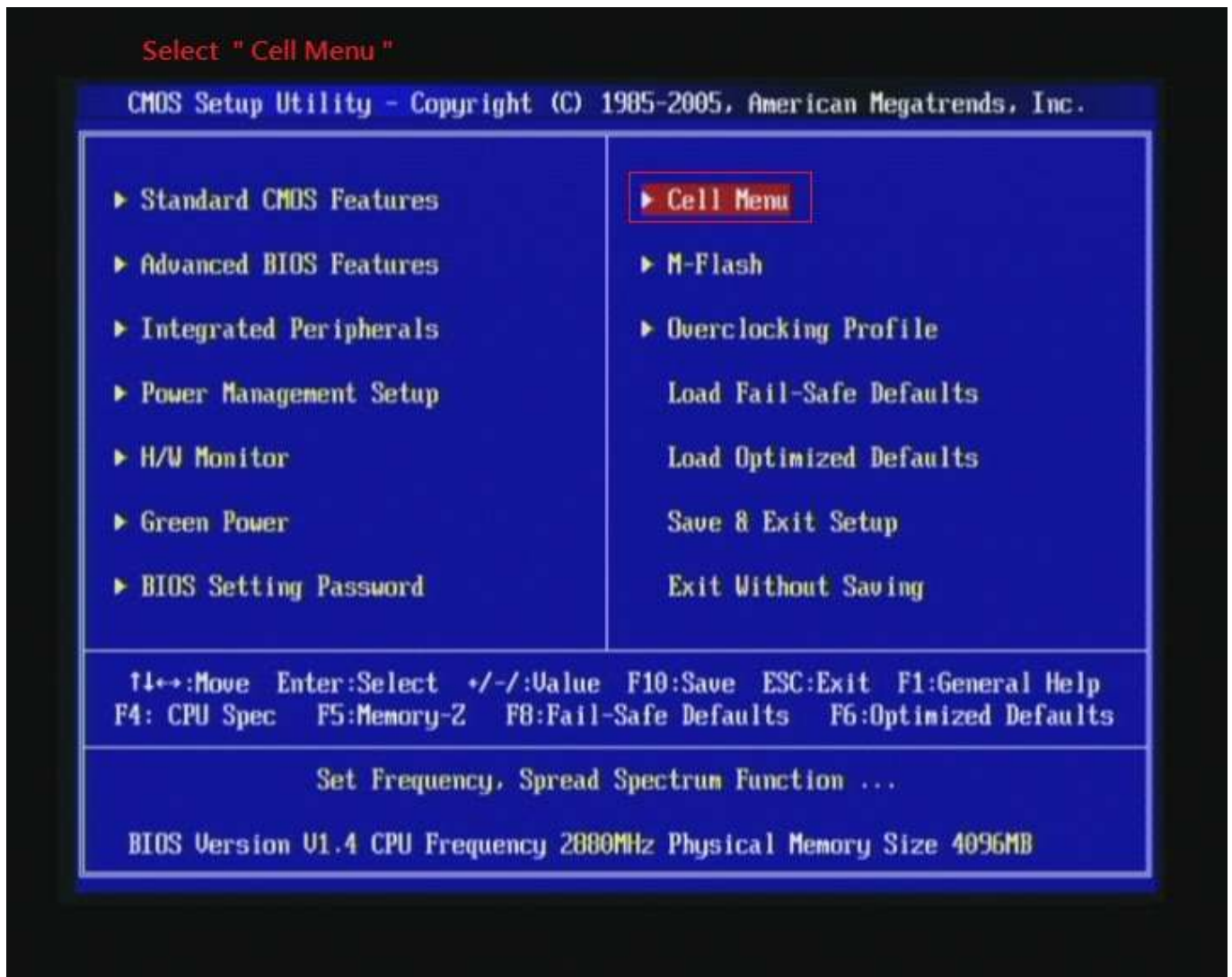
Advanced Overclocking and Testing

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. Select [Adjust CPU Base Frequency (MHz)] item , and increase to higher Base clock rate (ex:200). Then set [Memory Ratio] item to [5]. 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)

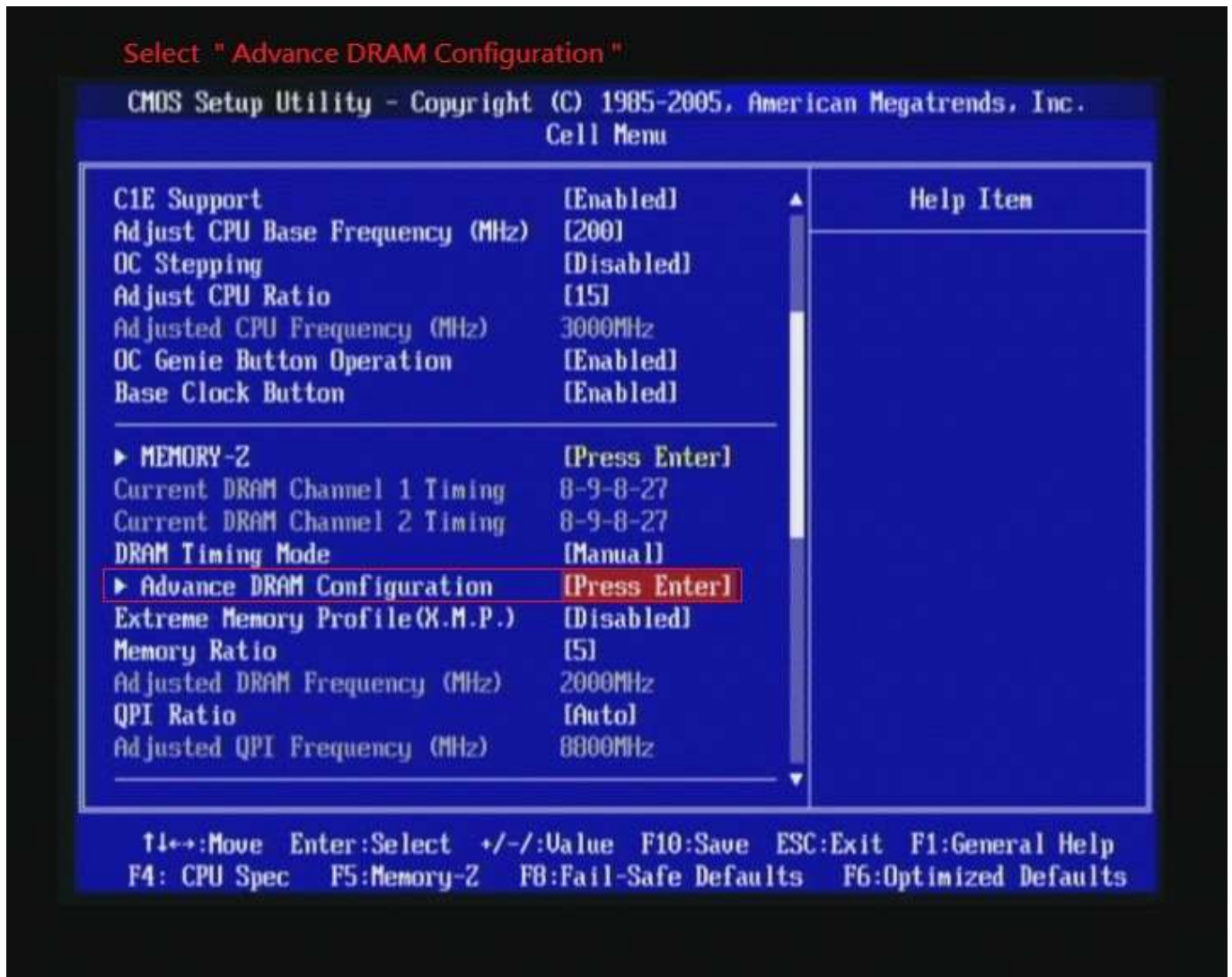
- | | |
|--|----------------|
| Step 1 : DRAM Timing Mode | Set [Manual] |
| Step 2 : Memory Ratio | Set [5] |
| Step 3 : Adjust CPU Base Frequency (MHz) | Set [200] |
| Step 4 : Adjust CPU Ratio | Set [15] |



4. Select [DRAM Voltage(V)] item , and set the value to [1.651].



5. Enter [Advance DRAM Configuration] item



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

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 "1N" to delay one cycle or "2N" to delay two cycles. 1N 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]	
Current CH1 tdrRdTRd	7	
Current CH1 tsrRdTWr	9	
Current CH1 tsrWrTRd	16	
Current CH1 tdrWrTRd	6	
Current CH1 tdrWrTWr	7	
Current CH1 tsrRdTRd	4	

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

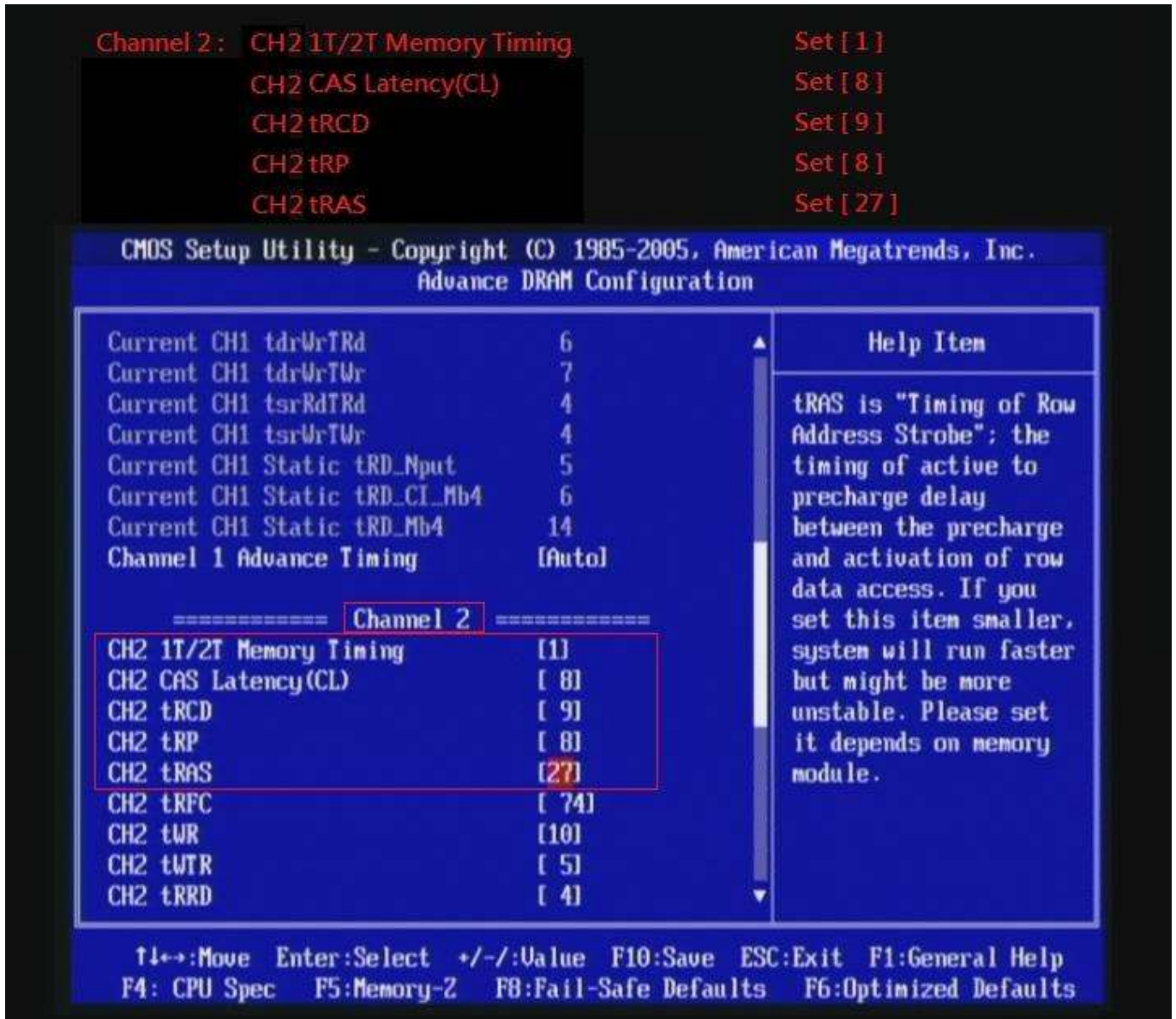
7. set [CH2 1T/2T Memory Timing] item to [1]

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

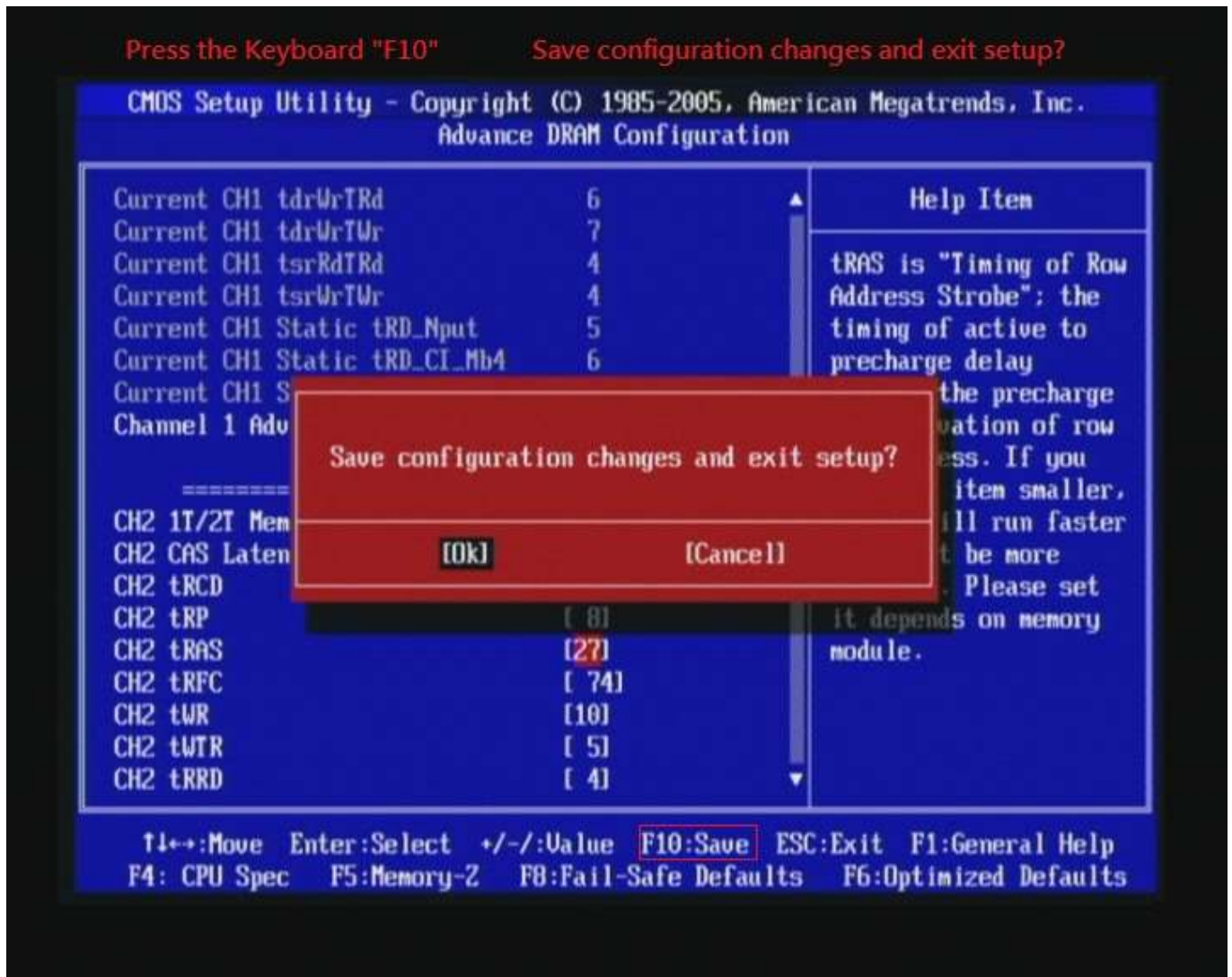
set [CH2 tRCD] item to [9]

set [CH2 tRP] item to [8k]

set [CH2 tRAS] item to [27]



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 : $1002.6 \times 2 = 2005$, timing : 8, 9, 8, 27, multi-core test => pass!)

The image displays a collage of screenshots from a Windows 7 system, demonstrating the results of a multi-core MemTest and system specifications.

MemTest Results: Four instances of MemTest are shown, all reporting 0 errors and 100% coverage. The RAM tested is 830 MB. The results are as follows:

- Instance 1: 115.0% Coverage, 0 Errors
- Instance 2: 115.9% Coverage, 0 Errors
- Instance 3: 115.4% Coverage, 0 Errors
- Instance 4: 112.0% Coverage, 0 Errors

CPU-Z System Information: The system is running an Intel Core i3 540 processor (Clarkdale) on an MSI H55-GD65 motherboard. The processor is running at 3007.7 MHz (15.0x multiplier) with a core voltage of 1.184 V. The system has 4096 MB of DDR3 memory (Dual channel, Symmetric) running at 1002.6 MHz (4:20 ratio).

Windows Task Manager Performance: The Task Manager shows the following performance metrics:

- CPU 使用率: 100%
- 記憶體: 3.61 GB
- 實體記憶體 (MB): 3959 (Total), 252 (Free), 252 (Used), 8 (Unused)
- 系統: 8008 (Control Code), 354 (Execution), 33 (Process), 0:00:21:35 (Idle Time), 3887 / 7916 (Recognized)

CPU-Z Memory Timings Table:

Parameter	Value
DRAM Frequency	1002.6 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)	74 clocks
Command Rate (CR)	1T
DRAM Idle Timer	
Total CAS# (tRDRAM)	
Row To Column (tRCD)	