

PRINCO DDR3-1600 user guide and testing for MSI H55 GD65 Motherboard

CPU i3-540 3.07G

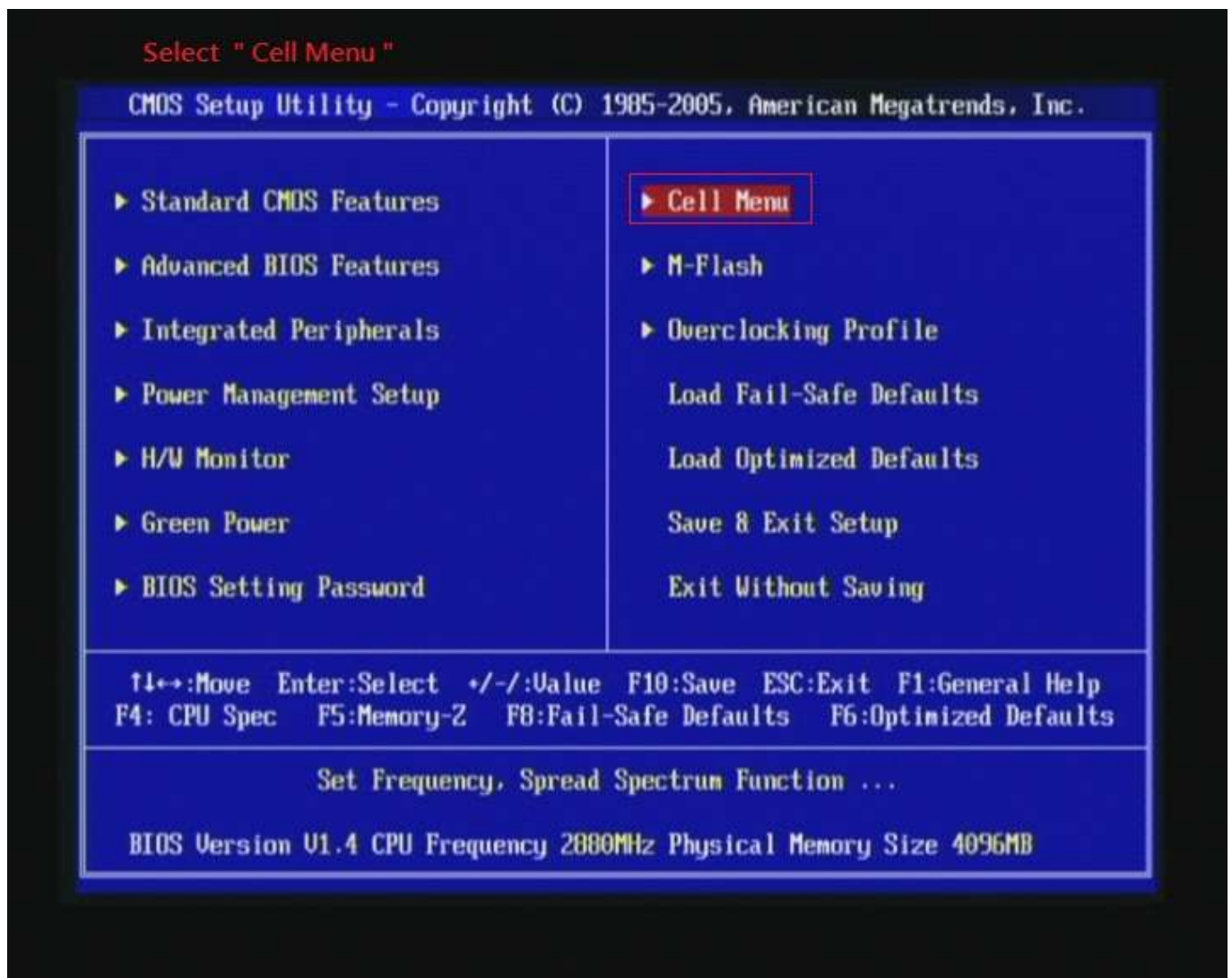


Part I : Standard test

It's the easiest way to enjoy overclock benefit by using PRINCO DDR3-1600 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 [Enabled] option , BIOS will load X.M.P parameter in SPD on DIMM board , which are performance optimized for PRINCO DDR3-1600 DIMM board
3. Set [Extreme Memory Profile Mode] item to [Advance]
4. Set [Adjust CPU Ratio] item to [18]

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

Set [Enabled]

Step 2 : Extreme Memory Profile Mode

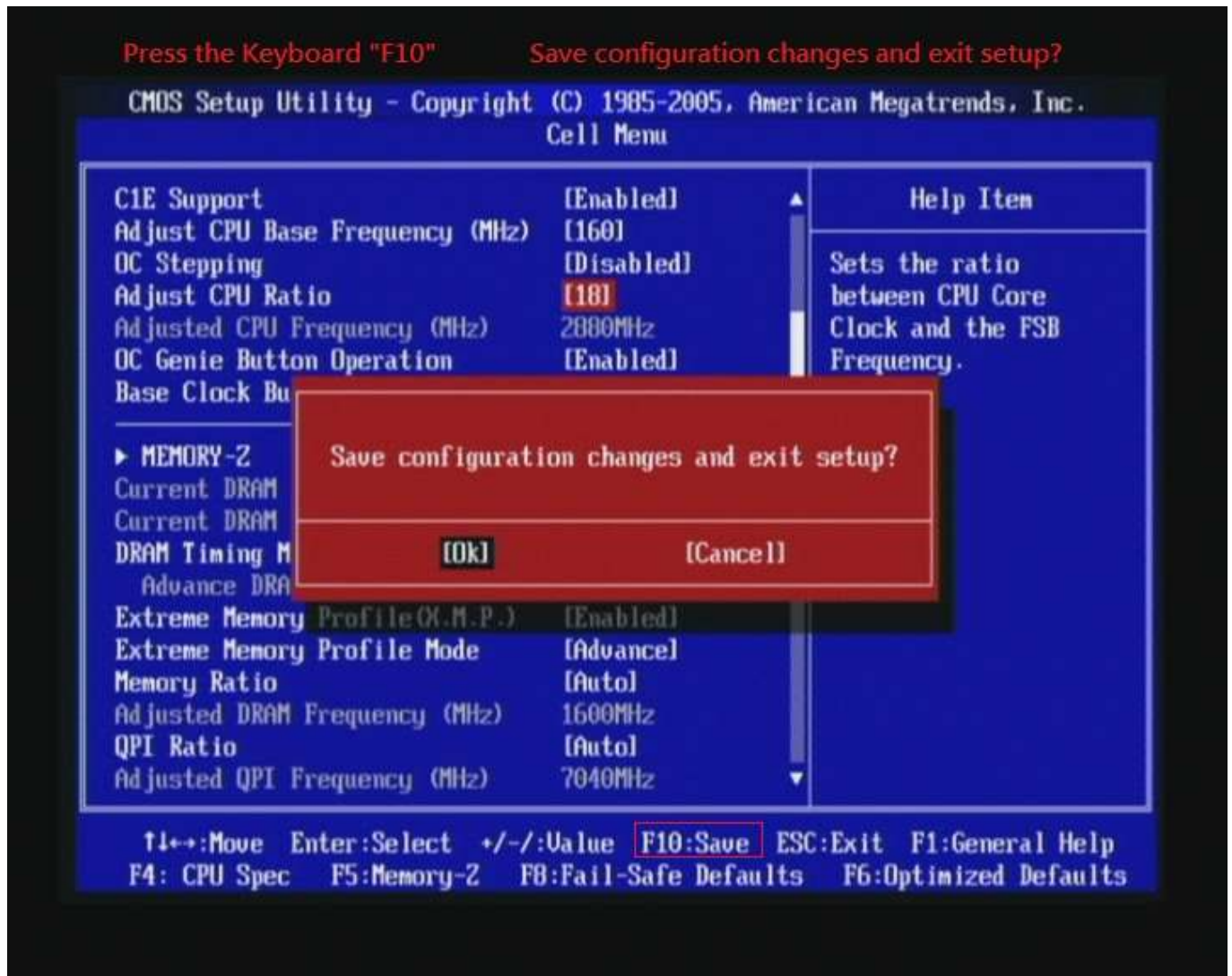
Set [Advance]

Step 5 : Adjust CPU Ratio

Set [18]



5. 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 : $803.1 \times 2 = 1606$, timing : 7, 9, 7, 24, multi-core test => pass!)

Four screenshots of the MemTest application. Each window shows '0 Errors' and a coverage percentage: 109.8%, 107.1%, 108.5%, and 162.4%. The RAM to test is set to 870 MB. The interface includes 'Start Testing', 'Stop Testing', and 'About MemTest' buttons.

CPU-Z Processor tab showing specifications for an Intel Core i3 540. The processor is a Clarkdale on a Socket 1156 LGA package, 32 nm technology, 1.192 V core voltage, running at 3.07 GHz. It has 6 cores and 4 threads. Cache includes 2x 32 Kbytes L1 and 2x 256 Kbytes L2.

Processor Name	Intel Core i3 540		
Code Name	Clarkdale	Brand ID	
Package	Socket 1156 LGA		
Technology	32 nm	Core Voltage	1.192 V
Specification	Intel(R) Core(TM) i3 CPU 540 @ 3.07GHz		
Family	6	Model	5
Ext. Family	6	Ext. Model	25
Stepping			2
Revision			C2
Instructions	MMX, SSE (1, 2, 3, 3S, 4.1, 4.2), EM64T, VT-x		

CPU-Z Mainboard tab showing details for an MSI H55-GD65 (MS-7637) motherboard. Manufacturer is MSI, chipset is Intel Havendale, and BIOS version is V1.4, dated 07/09/2010.

Motherboard Manufacturer	MSI		
Model	H55-GD65 (MS-7637)		
Chipset	Intel	Havendale/C	
Southbridge	Intel		
LPCIO	Fintek		

CPU-Z Memory tab showing DDR3 memory configuration. Type is DDR3, size is 4096 MBytes, dual channel, 2569.8 MHz NB frequency. Timings include 803.1 MHz DRAM frequency, 4:20 FSB:DRAM, 7.0 clocks CAS# latency, and 24 clocks cycle time.

Type	DDR3	Channels #	Dual
Size	4096 MBytes	DC Mode	Symmetric
		NB Frequency	2569.8 MHz

CPU-Z Memory Slot Selection tab showing a PRINCO-DR3-1600CL memory module. Module size is 2048 MBytes, max bandwidth is PC3-10700 (667 MHz), and voltage is 1.50 V.

Slot #1	DDR3
Module Size	2048 MBytes
Max Bandwidth	PC3-10700 (667 MHz)
Manufacturer	
Part Number	PRINCO-DR3-1600CL
Serial Number	

Windows Task Manager screenshot showing system performance. CPU usage is at 100%, and physical memory usage is 3.62 GB. The task manager shows 34 processes running.

CPU 使用率	100 %
記憶體	3.62 GB

處理程序: 34 CPU 使用率: 100% 實體記憶體: 93%

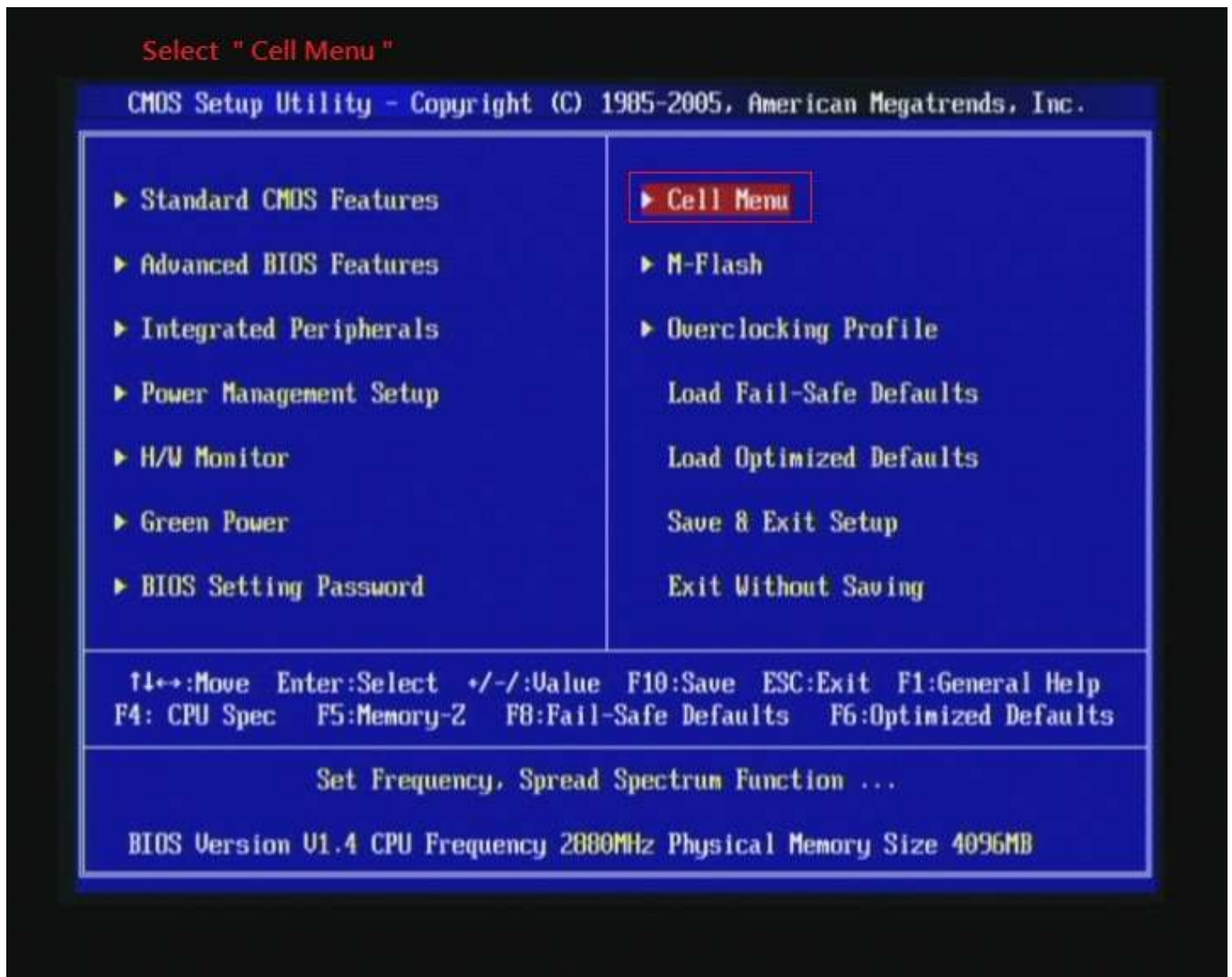
Advanced Overclocking and Testing

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



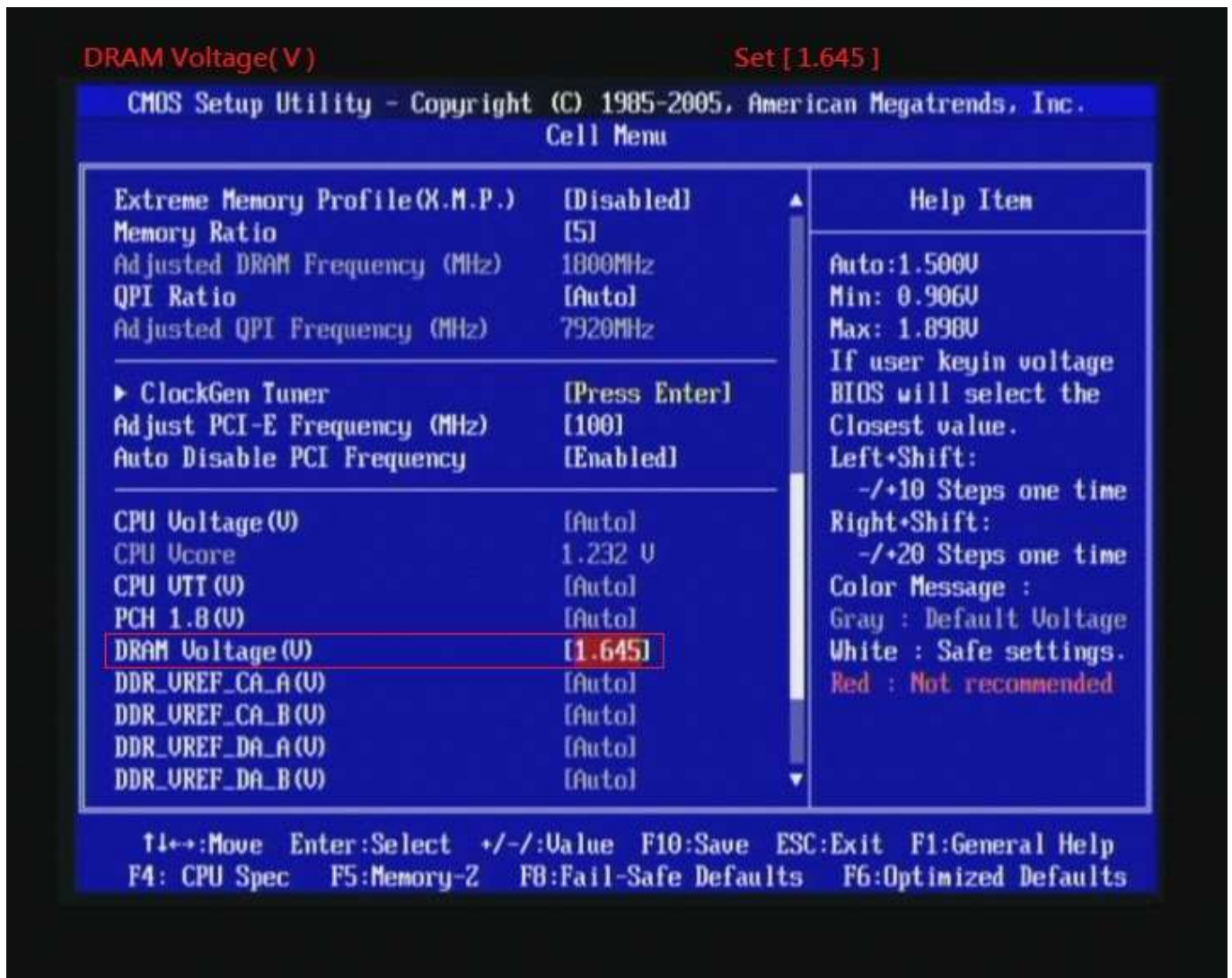
2. Enter [DRAM Timing Mode] item and select Manual
3. Select [Adjust CPU Base Frequency (MHz)] item , and increase to higher Base clock rate (ex:180). Then set [Memory Ratio] item to [5]. Don't forget setting [CPU Ratio Setting] item to suitable ratio [ex:17]

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

- | | |
|--|----------------|
| Step 1 : DRAM Timing Mode | Set [Manual] |
| Step 2 : Memory Ratio | Set [5] |
| Step 3 : Adjust CPU Base Frequency (MHz) | Set [180] |
| Step 4 : Adjust CPU Ratio | Set [17] |

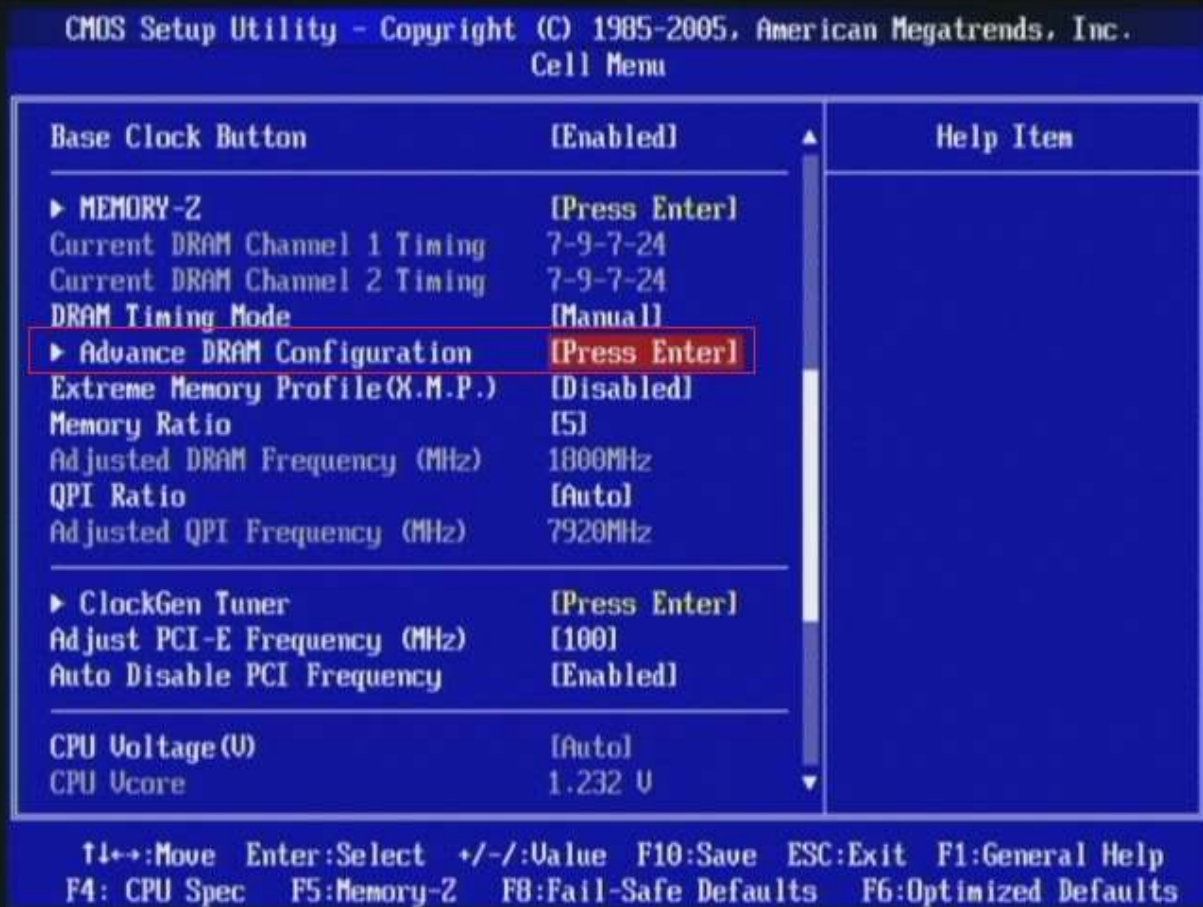


4. Select[DRAM Voltage(V)] item , and set the value to [1.645].



5. Enter [Advance DRAM Configuration] item

Select " Advance DRAM Configuration "



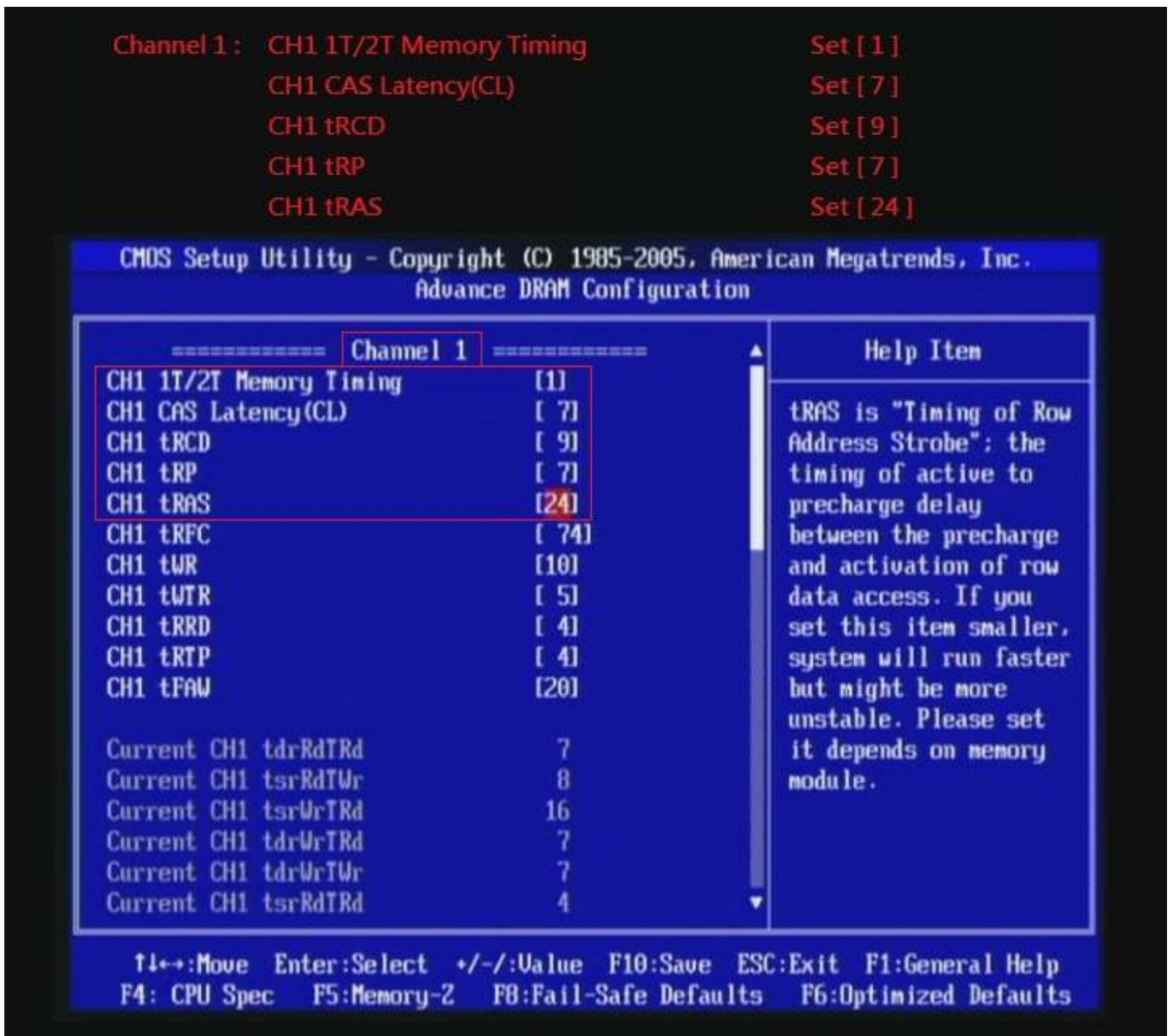
6. set [CH1 1T/2T Memory Timing] item to [1]

set [CH1 CAS Latency (CL)] item to [7]

set [CH1 tRCD] item to [9 k]

set [CH1 tRP] item to [7 k]

set [CH1 tRAS] item to [24 k]



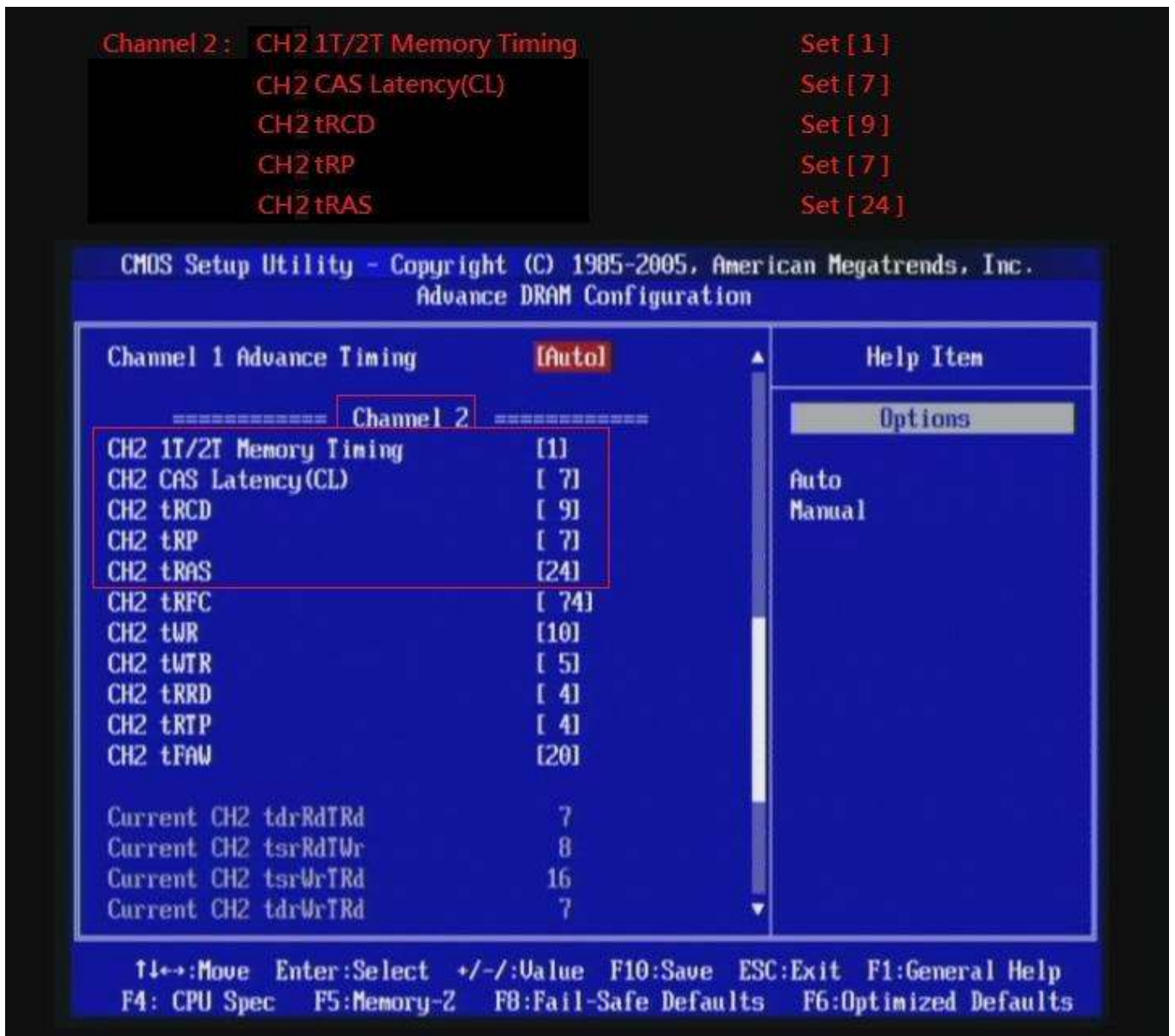
7. set [CH2 1T/2T Memory Timing] item to [1]

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

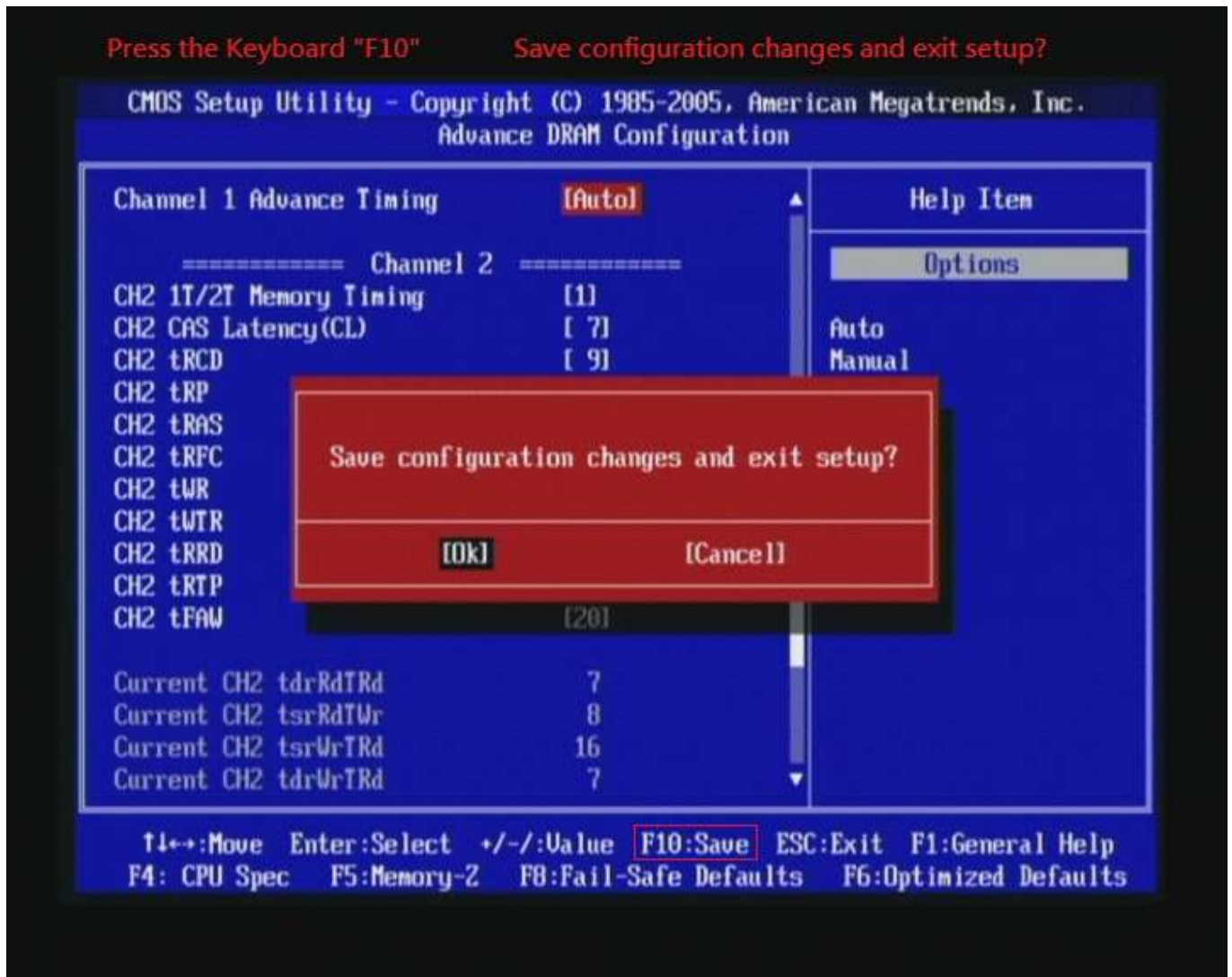
set [CH2 tRCD] item to [9]

set [CH2 tRP] item to [7]

set [CH2 tRAS] item to [24]



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 : $902.9 \times 2 = 1805$, timing : 7, 9, 7, 24, multi-core test => pass!)

The image displays a collage of screenshots from a Windows 7 system. On the left, four MemTest86 windows are shown, all reporting 0 errors and 100% coverage. The input for RAM size is 850 MB. The Windows Task Manager is open, showing CPU usage at 100% and memory usage at 94%. On the right, four CPU-Z windows provide detailed hardware information:

- Processor:** Intel Core i3 540, Clarkdale, Socket 1156 LGA, 32 nm, 3.07GHz. Caches: L1 Data (2x 32 KB, 8-way), L1 Inst. (2x 32 KB, 4-way), Level 2 (2x 256 KB, 8-way), Level 3 (4 MB, 16-way).
- Memory:** DDR3, 4096 MB, Dual channels, 2889.2 MHz. Timings: DRAM Frequency 902.9 MHz, CAS# Latency 7.0, RAS# to CAS# Delay 9, RAS# Precharge 7, Cycle Time 24, Row Refresh Cycle Time 74, Command Rate 1T, Voltage 1.50 V.
- Mainboard:** MSI H55-GD65 (MS-7637), Intel Chipset, Intel Southbridge, Fintek LPCIO.

Part III : Advance test

If you set parameter in BIOS as below ,

Dram Timing Mode : [manual]

Adjust CPU Base Frequency(Mhz) : [185]

Adjust CPU Ratio : [16]

Memory Ratio : [5]

CPU Voltage(V) : [Auto]

VTT Voltage : [Auto]

DRAM Voltage : [1.651]

DRAM timing : 9, 9, 9, 27

you can check next page

(Data rate : $927 * 2 = 1854$, timing : 9, 9, 9, 27 , multi-core test =>

pass!)

[0 Errors] MemTest

Enter megabytes of RAM to test

850

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.

[/] 105.6% Coverage, 0 Errors

[0 Errors] MemTest

Enter megabytes of RAM to test

850

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.

[/] 103.6% Coverage, 0 Errors

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

3.59 GB

實體記憶體 (MB)

總共	3959
快取的	276
可用	273
未使用	1

系統

控制代碼	8058
執行緒	359
處理程序	33
存留時間	0:00:22:20
認可 (MB)	3863 / 7916

資源監視器(R)...

處理程序: 33 | CPU 使用率: 100% | 實體記憶體: 93%

Z CPU-Z

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

Processor

Name: Intel Core i3 540

Code Name: Clarkdale Brand ID: [Intel Logo]

Package: Socket 1156 LGA

Technology: 32 nm Core Voltage: 1.208 V

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, 3S, 4.1, 4.2), EM64T, VT-x

Clocks (Core #0)

Core Speed	2968.8 MHz
Multiplier	x 16.0
Bus Speed	185.6 MHz
QPI Link	4082.1 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 Version 1.56 | Validate | OK

Z CPU-Z

CPU | Caches | Mainboard | Memory

Motherboard

Manufacturer: MSI

Model: H55-GD65 (MS-7637)

Chipset: Intel | Havend

Southbridge: Intel

LPCIO: Fintek

BIOS

Brand: American Megatrends

Version: V1.4

Date: 07/09/2010

Graphic Interface

Version: []

Link Width: x16

Side Band: []

CPU-Z Version 1.56

Z CPU-Z

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

General

Type: DDR3 Channels #: Dual

Size: 4096 MBytes DC Mode: Symmetric

NB Frequency: 2968.8 MHz

Timings

DRAM Frequency	927.8 MHz
FSB:DRAM	4:20
CAS# Latency (CL)	9.0 clocks
RAS# to CAS# Delay (tRCD)	9 clocks
RAS# Precharge (tRP)	9 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)	

CPU-Z Version 1.56 | Validate | OK

Z CPU-Z

CPU | Caches | Mainboard | Memory

Memory Slot Selection

Slot #1: DDR3

Module Size: 2048 MByte

Max Bandwidth: PC3-10700 (6670)

Manufacturer: []

Part Number: PRINCO-DR3-16

Serial Number: []

Timings Table

	JEDEC #2	JEDEC #1
Frequency	533 MHz	600 MHz
CAS# Latency	7.0	7.0
RAS# to CAS#	7	7
RAS# Precharge	7	7
tRAS	20	20
tRC	27	27
Command Rate		
Voltage	1.50 V	1.50 V

CPU-Z Version 1.56