

6. ADVANCED TESTS

SIMCHECK II and SIMCHECK II se advanced tests are essentially made by changing the SIMCHECK II setup. While most casual and non-technical users may not need to use SIMCHECK II's setup, you can get the most from SIMCHECK II by delving into the material presented in this section.

6.1 ADVANCED SETUP OVERVIEW



SIMCHECK II has a built-in EEPROM device which stores your setup. Therefore, when you turn your SIMCHECK II on, the unit "remembers" its recent setup.

SIMCHECK II's Advanced Setup mode lets you do the following:

- Preset a fixed speed (access time) reference so that all memory slower than the reference will be failed. This is different than the default mode, which automatically displays the actual speed.
- Preset a fixed frequency rate for SDRAM memory so that all memory slower than this reference will be failed.
- Preset a fixed refresh value for modules that you wish to have tested at various refresh rates.
- Preset a fixed module (or chip) size so that all tested memory will fail if it is not of this type (as opposed to the default mode which automatically detects the module size).
- Customize the Test Flow by selectively skipping various test modes and phases.
- Change the values of the Row Address Hold Time and the RAS to CAS delay time.
- Take an in-depth look at the operation of the automatic Access Time algorithm [performance].
- Repair bad modules faster.



Press any key (except ESC) if you wish to skip the SETUP initial graphic screen.

6.2 ACCESSING SETUP MODE

You can enter the SIMCHECK II's Advanced SETUP mode only from the STANDBY mode by first pressing **F2**. The setup graphic screen will appear momentarily. Thereafter, the menu offers five selections:

- **F1** SETUP PARAMETERS
- **F2** TESTFLOW
- **F3** CONFIGURATION
- **F4** LIST
- **F5** AUTO

These selections are detailed below. You return to the STANDBY mode by pressing ESC. If current setup was changed, you will see a message notifying you that the new setup is stored in the non-volatile memory of SIMCHECK II.

6.3 SETUP PARAMETERS

The SETUP PARAMETERS selection, in which users can preset the **type**, **frequency**, **size**, **speed**, and other **parameters** of the tested modules or chips, is one of the more powerful features which will appeal to advanced users.

- Presetting the **speed** allows you to test memory operation at a fixed reference. For example, with a preset value of 80nS, SIMCHECK II will fail all modules slower than 80nS, even if they operate fine at a slower speed.
- Presetting the **frequency** of the module allows you to test SDRAM memory operation at a fixed reference. For example, with a preset value of 100MHz, SIMCHECK II will fail all modules operating at slower frequency rates.
- The importance of presetting **size** may not be immediately apparent. The following example will illustrate a potential use. Suppose that you are testing a batch of 4Mx72 modules which accidentally includes one 4Mx64 module. Without the ability to preset size, you have to closely watch SIMCHECK II's automatic size indication in order to catch this 4Mx64 module. With a preset size of 4Mx72, SIMCHECK II aborts the tests and responds with an error message (SIZE ERROR: 4Mx64

NOT EQUAL TO @4Mx72) when it detects a module other than 4Mx72.

SETUP PARAMETERS MENU:

SETUP PARAMETERS allows you to make changes to the existing setup for module size, timing parameters (including speed), voltage settings, refresh, or patterns used to test.



Selecting F5 on this and most other setup menus will set the current setup group to their default (AUTO) values.

```

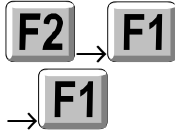
SETUP PARAMETERS
F1 SIZE          Esc QUIT
F2 TIMING       F5 AUTO
F3 VOLTAGE      F4 MORE
    
```

Selecting F4 will bring up the second menu for SETUP PARAMETERS:

```

SETUP PARAMETERS
F1 PATTERNS     Esc PrevMenu
F2 REFRESH     F5 Reserved
F3 MODE        F4 Reserved
    
```

SIZE SETUP:



6.3.1 MEMORY SIZE SETUP

The current preset memory size (or AUTO-SIZE) is displayed. ← or → can be used to scroll the setting from AUTO-SIZE, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K, 1M, 2M, 4M, 8M, 16M, 32M, 64M, 128M, 256M, 512M to 1G. Press F1 ENTER to set the size you selected.

Upon entering the size, you are then prompted to enter the bit configuration of your module. ↑ and ↓ can be used to either increase or decrease the value on the display and ← and → can be used to move the cursor position either left or right. Press F1 ENTER to set the bit configuration you selected. Afterwards, you are prompted to select whether your setup will fail modules not meeting this size, or whether the DUT should be partially tested.

```

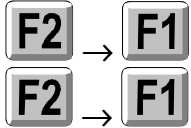
SHOW ERROR IF DUT
DIFFERS FROM SETUP
TEST DUT AT SETUP
SIZE (PARTIAL TEST)
    
```

Pressing ↓ will highlight TEST DUT AT SETUP SIZE, forcing smaller modules to fail and larger modules to only be tested at the size entered.

6.3.2 TIMING

This selection will display the Setup Timing menu. You may choose to setup the speed or frequency of the module, or change either the RAS to CAS delay time (Trcd) or the Row address Hold Time (Trah). If a previous timing parameter was entered and you wish to reset it to the default timing setup, simply select **F5** AUTO. Selecting **F4** MORE allows you to enter the Advanced Code Setup Menu; this feature is currently under development.

SPEED SETUP:



6.3.2.1 SPEED SETUP

Selecting this function will allow you to change the current setup for the access time from RAS. The ← and → keys are used to position the cursor, while the ↑ and ↓ keys allow you to either increase or decrease the value at the current cursor position. To return to AUTO SPEED, simply press **F5** until the cursor reaches its last position on the right. To enter your selected speed setting, press **F1**.

There are two modes for presetting speed. The default mode is "SPEED AT" where SIMCHECK II speed is actually fixed at the preset speed. This mode is useful when the actual speed is unimportant, so long as it meets a particular reference value. The other mode is the "SPEED LIMIT" where SIMCHECK II fails a unit that is slower than the preset speed limit. If the unit tests slower than the preset speed, the test terminates with a "SPEED ERROR: ABOVE LIMIT" message. If the unit tests faster than the preset limit, the actual speed is displayed.

After presetting the speed, SIMCHECK II allows you to select whether the value entered will be used for the default setup speed, or if it is to be used as a speed limit.

```

TEST OUT AT SETUP
SPEED
USE SETUP SPEED
AS SPEED LIMIT
  
```

Note that if you select the SPEED LIMIT mode, the preset speed will be shown with a “ ^ ” prefix during all subsequent test modes.

FREQUENCY SETUP

When using the Sync Adapter, you will note that the menu will include an additional option when setting up module speed.

```
SETUP SPEED:
F1 SETUP ACCESS TIME
F2 SETUP FREQUENCY
```

Selecting F1 will take you through the regular access time setup. Selecting F2 allows you to determine the frequency rate at which SIMCHECK II will access SDRAM memory.

```
SETUP SPEED:
3100MHZ
F1 ENTER          ABORT Esc
← 100MHZ          →
```

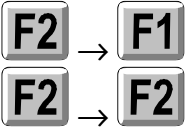
Use the ← and → keys to scroll through the available frequencies. SIMCHECK II will now run modules strictly at the 100MHz level.

6.3.2.2 SPEED ALGORITHM SETUP

If you select AUTO SPEED, or if you select a certain speed value to be used as a limit, you will be prompted to select the speed algorithm.

```
SET SPEED ALGORITHM:
FAST [default]
F1 ENTER          ABORT Esc
← FAST [default] →
```

This will determine the resolution at which SIMCHECK II will make its speed determination. The broader the resolution, the quicker the test. For a more precise speed measurement, select the default by pressing **F1**.

Trcd SETUP:

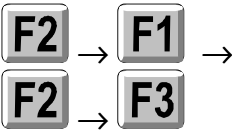
This function has no effect on SDRAM testing.

6.3.2.3 Trcd SETUP

Selecting this function will allow you to change the existing RAS to CAS delay time (Trcd). SIMCHECK II will first prompt you to determine if you wish to change the existing setup of Trcd, or leave it as AUTO. Selecting **F1** will allow you to change Trcd. You will also have the capability to view the settings in graphic detail, as the display will change to show each control signal in relation to the address lines.



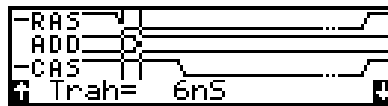
As you will note by the graphic display, the CAS signal moves forward or backward in response to the pressing of either **↑** (increasing the time) or **↓** (decreasing the time). Press **F1** to enter the time selected. The display will then return to the previous menu.

Trah SETUP:

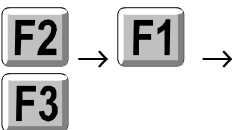
This function has no effect on SDRAM testing.

6.3.2.4 Trah SETUP

This function will allow you to change the current setting of the Row Address Hold Time (Trah). As the previous setting, a choice is given to determine if you wish to change the current Trah, or leave it as AUTO. Selecting **F1** will allow you to change Trah.



Like the Trcd function above, the graphic view showing the address line and the control signals is displayed. By pressing either **↑** or **↓**, the time will increase or decrease, with the address display following the value. Press **F1** to enter the time selected. The display will then return to the previous menu.

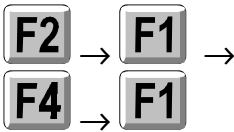
VOLTAGE SETUP:**6.3.3 SETUP VOLTAGE**

Selecting this setting will allow the use of either 5.0V or 3.3V testing. Select **F4** AUTO to allow SIMCHECK II to use its internal algorithm for determining the best voltage. Select **F3** to setup CUSTOM VOLTAGE for the test. Press **F5** to reset the

voltage to its default setting. The AUTO and CUSTOM VOLTAGE features are currently under development.

SDRAM testing is performed strictly at 3.3V regardless of setup voltage.

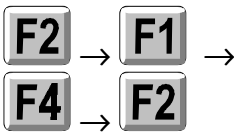
PATTERNS SETUP:



6.3.4 SETUP PATTERNS

This selection (from the second menu of SETUP PARAMETERS) allows you to edit the two of the main 32-bit test patterns used by BASIC test and similar tests. Default patterns are PATT1= 55555555h, PATT2=AAAAAAAAh. Setup uses hexadecimal notation.

REFRESH SETUP:



6.3.5 SETUP REFRESH

This selection (from the second menu of SETUP PARAMETERS) will allow you to set a specific refresh rate by which the DUT is to be tested.

You can set the refresh to Auto, None, or a fixed 2mS-999mS interval. Longer refresh intervals create slower refresh rate, and vice versa (refresh rate =1/refresh interval). Memory devices are better and typically consume lower power if they can sustain data at larger refresh intervals.

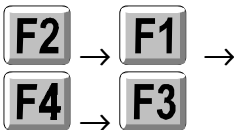
```

SETUP REFRESH:
AUTO          NONE
F1 ENTER     ABORT
←+ REFRESH:  AUTO
  
```

To set this rate, use ← or → to position the cursor, then use ↑ or ↓ to set the refresh value in mS. Press F1 to enter your selected value. Moving the cursor to the right most position will toggle between AUTO refresh and NONE, or no refresh. AUTO refresh will set the default refresh value of 50mS for each module, whereby NONE, or no refresh, will cause SIMCHECK II to stop any special refresh operation to the DUT. Since the regular memory test typically covers all the rows in a rapid succession, the test itself actually refreshes the memory, even if

you set refresh to None. Therefore, do not be surprised if most of your memory devices seem to work even when you set refresh to NONE, or if you set it to a slow rate like 900mS. In such cases, you will notice failures mostly in large memory devices, during AUTO-LOOP.

On the other hand, when setting refresh at an extremely fast rate, e.g. 4mS, large memory devices cannot be tested since the refresh activity takes most of the processor time. Therefore, our test program automatically increases your set refresh interval if it is found to be too fast for the tested memory. You can see the Actual refresh rate in the test log. For example, if you set refresh to 7mS and test a 4Mx32 device, you will see in the test log an actual refresh interval of 8mS. For 16M, the SIMCHECK II's minimum is 16mS, and for 1M, the minimum is 4mS. These SIMCHECK II minimum values are well below the DUT's minimum specifications, thus allowing you to fully test the refresh capabilities of your memory.

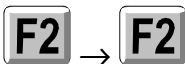
MODE SETUP:**6.3.6 SETUP MODE**

You can setup MODE to force SIMCHECK II to pass only modules of a particular mode. For example, if you setup MODE to EDO, only EDO type devices will pass the tests.

```

SETUP MODE:
EDO
F1 ENTER          ABORT Esc
← EDO             →
  
```

To change to the desired mode of operation, press ← or → to scroll through the different options available. Press F1 to enter your selection.

**TESTFLOW
SETUP:****6.4 TESTFLOW**

Press **F2** from the main setup menu to enter the testflow setup. This menu will allow you to setup your own customized program test flow.

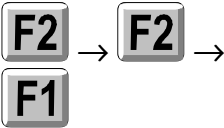
```

SETUP TEST FLOW:
F1 SKIP TESTS  Esc QUIT
F2 EDIT TEST FEATURES
F3 DEFAULT
  
```


Pressing **F5** from this menu resets the program to its default testflow. The following display appears upon resetting the test flow to its default mode:

```
SIMCHECK IS SET FOR:
DEFAULT TEST FLOW AND
TEST FEATURES
```

SKIP TESTS:



6.4.1 SKIP TESTS

Press **F1** to enter the SKIP TESTS menu. Use **←** or **→** to scroll through the different test phase titles.

```
SKIP TESTS:
ENTER      ABORT Esc
← VOLTAGE BOUNCE →
↑ PERFORM THIS TEST
```

If you wish to skip a test, simply scroll through the test phases until you find the one you wish to skip. Press **F3** to remove it from the test procedure. Note that each phase has the caption 'PERFORM THIS TEST' until you press **F3** for that test phase to remove it from the procedure. Once removed, the caption will read 'SKIP THIS TEST', after which you may continue scrolling to other test phases.

```
SKIP TESTS:
ENTER      ABORT Esc
← VOLTAGE BOUNCE →
↑ SKIP THIS TEST
```

After all your changes have been made, press **F1** to enter your new test procedure.

6.4.2 EDIT TESTS

The function for Editing Test Features is still under development so you will be returned to the setup menu when choosing this function.

6.5 CONFIGURATION

The CONFIGURATION setup menu allows you to change the SIMCHECK II configuration.

```

CONFIGURATION SETUP
F1 DUT TYPE  Esc QUIT
F2 DEBUG     F5 DEFAULT
F3 SHOW PATT F4 MORE

```

6.5.1 DUT TYPE SETUP

You can force SIMCHECK II to test only DUT of specific types. For example, you may force it to test only DIMMs with 72 pins. By selecting this configuration, SIMCHECK II will report an error whenever you test a different type device.

DUT TYPE SETUP:

F2 → **F3** →
F1

Press **F1** to enter the DUT TYPE SETUP mode.

```

SETUP DUT TYPE:
AUTO
F1 ENTER          ABORT Esc
← AUTO           →

```

Pressing ← or → will allow you to scroll through the various DUT types. Press **F1** to enter your selection.

DEBUG SETUP:

F2 → **F3** →
F2

6.5.2 DEBUG SETUP

This selection is used by INNOVENTIONS for the development of the SIMCHECK II program. It has eight debug flags which may be toggled by their corresponding keys. Pressing **F5** from the configuration menu will reset the configuration to its default settings.

SHOW PATTERNS:

F2 → **F3** →
F3

6.5.3 SHOW PATTERNS

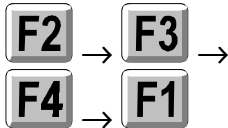
This selection allows you to enable or disable the HEX patterns displays during BASIC test and other tests. The default value is SHOW PATTERNS.

Selecting the **F4** key allows you to see additional Configuration Options.

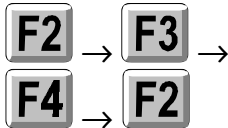
```

CONFIGURATION SETUP
F1 HANDLER  Esc QUIT
F2 PRINTER  F5 SDRAM
F3 SPD      F4 ProdInfo

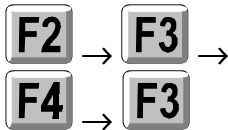
```

HANDLER SETUP:**6.5.4 HANDLER SETUP**

SIMCHECK II can control advanced automatic SIMM device Handlers in the production line. This selection allows you to enable or disable SIMCHECK II's Handler support. A special Handler key is necessary to operate this setup menu. Please refer to Section 8.13 for additional information on setting up the HANDLER PAL chip.

6.5.5 DIRECT PRINTER SETUP**DIRECT PRINTER SETUP:**

You can use our optional printer adapter to connect SIMCHECK II directly to a printer, without using your PC and the supplied Realtime Interface program. This selection allows you to enable or disable SIMCHECK II's direct printer support. Please refer to Section 8.11 for additional information on the setting up the printer port.

6.5.6 SPD PROGRAM ENABLE**SPD PROGRAM ENABLE:**

This option allows you to enable SPD programming. Please note that we recommend programming to be done by advanced users only. Additionally, we recommend that SPD data be backed up before programming.

ALWAYS MAKE BACKUP FILES BY UPLOADING THE SPD DATA TO YOUR PC AND SAVING IN *.SPD FILES. INCORRECT SPD DATA MAY CAUSE A MODULE TO MALFUNCTION IN YOUR COMPUTER.

Once backups are made, you can experiment with the various programming modes to find the one best suited for your application.

Use the right arrow button to select the programming mode.

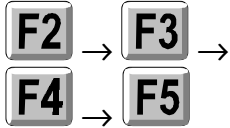


BYTE MODE PROGRAMMING - each byte of the SPD is

written to a specific address in the SPD EEPROM. This is the slowest mode but it should work with almost all SPD devices.

8 or 16 BYTE PAGE MODES - write data into the SPD at groups of 8 or 16 bytes at a time. These are faster modes but may not be compatible with all SPD devices.

SET SYNC
DIMMCHECK
CONFIGURATION:



6.5.7 Sync DIMMCHECK CONFIGURATION

Selecting **F5** from the second Configuration Menu allows you to enter the Sync DIMMCHECK Configuration Setup.

```

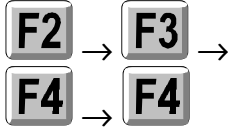
SyncDIMMCHECK CONFIG.
F1 LOCK          Esc QUIT
F2 PC100         F5 DEFAULT
F3 P.BURST      F4 REG/UBF
  
```

Selecting **F1** will allow you to set the Sync Adapter to fully lock on all available frequencies relative to SIMCHECK before its initial use. This setting is normally not needed, however it may be necessary to activate it if instructed by Tech Support in certain rare occasions where testing is unstable. The default setting is OFF.

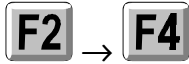
Selecting **F2** allows you to specify whether you wish to have tight margins or wide margins for the determination of a PC-100 module. The default setting is tight margins.

Selecting **F3** allows you to toggle between active Page Burst on SDRAM modules, or disabling the feature. As most SDRAM modules will have the burst capability, we recommend for this function to be left in its default state of ON.

Selecting **F4** allows you to set the indicators “UBF” or “REG” either ON or OFF during the BASIC TEST. “UBF” is displayed when SIMCHECK detects an unbuffered module under test, while the “REG” is displayed when testing registered memory. The default setting is ON.

VIEW PRODUCT INFORMATION:**6.5.8 PRODUCT INFORMATION DISPLAY**

Selecting **F4** from the second Configuration Menu allows you to view the Product Information Display. This display shows you which optional software features are activated on your SIMCHECK. This display also provides revision information for your SIMCHECK's firmware and hardware, as well as your SIMCHECK Serial Number.

6.6 VIEW SETUP LIST**VIEW SETUP LIST:**

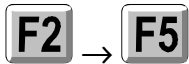
Only variables, which have been changed from their default setting, are shown.

Press **F4** on the SETUP main menu to view the current settings of the SIMCHECK II program. By scrolling through the virtual window displayed, you can see the current size settings, timing parameters set, etc.

```

SETUP LIST
SETUP SIZE:016Mx64
SETUP SPEED:0100MHZ
SDRAM LOCK=0H
  
```

The setup list can also be viewed from Standby mode by pressing **F4** then **F2**. Press **ESC** to return to the previous menu.

6.7 SETUP RESET TO AUTO**RESET TO AUTO:**

Selecting the AUTO command from the main setup menu returns SIMCHECK II to its factory default settings for every parameter. A message appearing after the selection will inform you that this setting has taken place.

```

SIMCHECK IS RESET
TO ITS DEFAULT
AUTOMATIC OPERATION
  
```