

THE WORM MEMORY TEST

The Worm memory test is designed to test the dynamic RAM in single user systems with 64K of RAM or less. When loaded into memory, Worm first locates the top of memory, then executes a sequence of instructions, testing all possible bit positions byte by byte. Worm differs from other memory tests in that it writes to memory and reads immediately, rather than with a delay. This often uncovers failures that might otherwise not easily be found. As it does this byte by byte write and read, it moves itself through memory, which is where it gets the name Worm. If any errors are found, an error message is displayed on the screen, and the test continues.

WARNING: This test is memory destructive. Any important information in memory should be written to the disk before running this test.

PROCEDURE:

Be sure that your RAM board is properly bank selected. For a 64K board, the #1 switch should be closed, and the rest open. (See Figure 1).

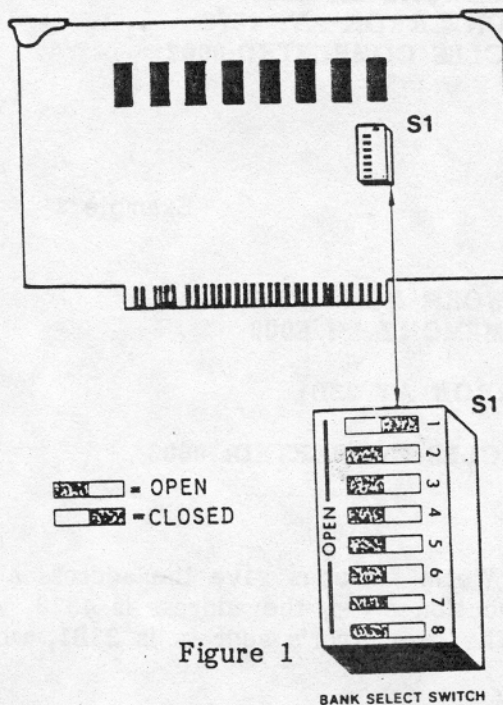


Figure 1

BANK SELECT SWITCH

Insert the Vector test disk and boot. Enter the command **WORM** and type return. The test begins automatically. What should appear on the screen will be:

```
THE WORM MEMORY TEST
TOP OF MEMORY IS: E000
TEST CYCLES COMPLETED: 0000
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Top of memory in this case is for a standard Vector 64K RAM system. A 48K system would show the top of memory to be C000. As each pass completes, the number of test cycles will increment by one, using the hexadecimal number system. Worm should be allowed to run at least 15 passes. When it has done this, the number of TEST CYCLES COMPLETED should read 000F. If a system is having an intermittent failure, the test should be allowed to run longer. Running the test overnight is often a good idea. If a failure occurs, there are two types of errors which may show up. Both failures, if encountered, will print on the screen as many times as they occur, and will continue to scroll up and off the screen as new failures are printed. The first type of failure is an execution error (Example 1), and the second is a trap error (Example 2).

Example 1

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THE M1 WORM MEMORY TEST
TOP OF MEMORY IS: E000
EXECUTION ERROR AT: 4878
TEST CYCLES COMPLETED:0002
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Example 2

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THE M1 WORM MEMORY TEST
TOP OF MEMORY IS: E000
TRAP ERROR AT 23B1
TEST CYCLES COMPLETED: 0003
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Both types of Worm failures give the address at which the error occurred. In the case of the Execution error, the address is 4878, which occurs in the second row of memory chips. The trap error's address is 23B1, which is in the first row of memory

chips. (See figure 2). This is only marginally useful as a tool in trouble-shooting the board to component level because there are many components on the board in addition to the memory chips which may be responsible for this failure, particularly the buffer chips. Running the MDIAG test can be a valuable aid in further trouble-shooting of the faulty memory board, to determine if a memory chip is at fault. Also, either type of error may be caused by a component other than the RAM board. If a failure occurs, it is best to replace the suspected memory board with a known good board, and run the test again. If the test still fails, the ZCB is the probable cause. If, however, the test then passes, the problem is with the memory board and it should be replaced.

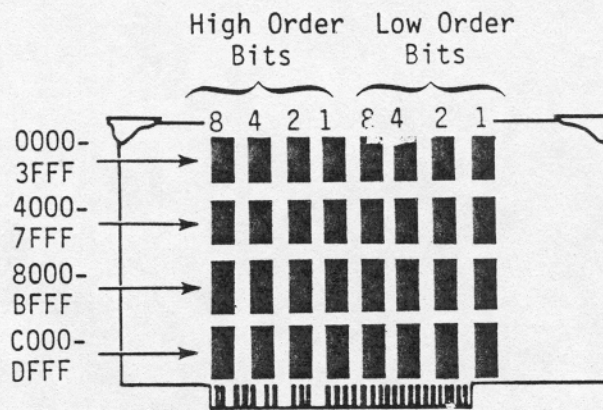


Figure 2