Apple III Hardware: 5-volt Confidence RAM Test

This article last reviewed: 9 November 1988

There is a Confidence RAM Test for Apple IIIs on the Confidence Disk and the
Dealer Diagnostic Disk. With this test, you can locate bad chips on a 5-volt
board.

--> NOTE: Before runnning the Confidence RAM test, remove all peripheral cards
         from the Apple III, especially any ProFile interface cards and
         Grappler printer cards.

The test results show the bank, address, and test expectations and actual
performance. For example, after the test, say the console displays:

   BNK 82, ADR 37AF, EXP 40, GOT 48.

To locate the bad chip, you must translate these results into a map that
corresponds to the 2 banks of 16 chips on the memory board.

   1. The bad chip is in bank 2. The bank number comes from the last digit of
      the BNK field.

```
      BANKS: 0, 1, 2      X  X  X  X  X  X  X  X  X  X  X  X  X  X  X  X
      BANKS: 3, 4, 5, 6   x  x  x  x  x  x  x  x  x  x  x  x  x  x  x  x
```

   2. The bad chip is in the right side of the bank. The side is determined by
      the range into which the address--37AF, the number in the ADR
      field--falls.

```
                      ADDRESS RANGE:           ADDRESS RANGE:
                        4000-7FFF                 2000-3FFF
                                                  8000-9FFF

        BANKS: 0, 1, 2       x  x  x  x  x  x  x  x  X  X  X  X  X  X  X  X

                      ADDRESS RANGE:           ADDRESS RANGE:
                        4000-7FFF                 2000-3FFF
                                                  8000-9FFF

        BANKS: 3, 4, 5, 6    x  x  x  x  x  x  x  x  x  x  x  x  x  x  x  x
```

   3. The bad chip is D5. The bad chip shows up in the comparison of the binary

representation of the hexidecimal values in the fields EXP and GOT, which
contain the test expectations and performance. Any difference between the
two indicates where to find the bad chip or chips.

```
   hexidecimal binary    hexidecimal binary    hexidecimal binary

        0         0000
        1         0001        6        0110        B        1011
        2         0010        7        0111        C        1100
        3         0011        8        1000        D        1101
        4         0100        9        1001        E        1110
        5         0101        A        1010        F        1111


   EXP = 40 (hexadecimal) = 01000000 (binary)
   GOT = 48 (hexadecimal) = 01001000 (binary)


              EXP = 40 (hexadecimal) = 0  1  0  0  0  0  0  0 (binary)
              GOT = 48 (hexadecimal) = 0  1  0  0  1  0  0  0 (binary)
                                       ok ok ok ok !  ok ok ok


                          ADDRESS RANGE:
                            2000-3FFF


      BANK 1            x  x  x  x  x  x  x  x  x  x  x  x  X  x  x  x
```

In the chip location number D5, the letter comes from the letter of the
banks of chips on the memory board:

```
   LETTER: D
    BANKS: 0, 1, 2    x  x  x  x  x  x  x  x  x  x  x  x  X  x  x  x

   LETTER: C
    BANKS: 3, 4, 5, 6 x  x  x  x  x  x  x  x  x  x  x  x  x  x  x  x
```

The number comes from the number of the chip on the memory board:

```
   NUMBER: 17 16 15 14 13 12 11 10 9  8  7  6  5  4  3  2

 LETTER: D  x  x  x  x  x  x  x  x  x  x  x  x  X  x  x  x (BANKS 0, 1, 2)
         C  x  x  x  x  x  x  x  x  x  x  x  x  x  x  x  x (BANKS 3, 4, 5, 6)
```

Replace the bad memory chip(s) and run the test again. If the system fails the
memory board test, exchange the memory board itself. If that dosen't help,
exchange the main logic board.
Copyright 1988 Apple Computer, Inc.

Keywords: <None>

==

This information is from the Apple Technical Information Library.

19960215 11:05:19.00

Tech Info Library Article Number: 1294