MAP 2400: Enhanced Graphics Adapter

Symptom Explanation	Conditions That Could Cause This Symptom
You have entered this MAP because you suspect a problem with the display connected to the Enhanced Graphics Adapter, you received an audible error code, or you have an error message indicating an Enhanced Graphics Adapter problem.	• The Enhanced Graphics Adapter is failing. • The display is failing. • The Graphics Memory Expansion Card is failing. • A Graphics Memory Module is failing.

001

If two display adapters are installed in the system, continue with this MAP. If a failure is not found, continue with the MAP for the second display adapter.

- Power off the system.
- Ensure any switches or jumpers are set correctly for the configuration.
- Insert the Advanced Diagnostics diskette into drive A.
- Turn the brightness and contrast controls fully clockwise.
- Power on the system.
- Note any audio responses during the POST.

DID YOU HEAR ONE LONG AND THREE SHORT BEEPS?
Yes No

　　002
　　Go to Step 008 in this MAP.

003
(Step 003 continues)

003 (continued)
**IS A GRAPHICS MEMORY EXPANSION CARD
INSTALLED?**
Yes No
 | |
 | **004**
 | Replace the Enhanced Graphics Adapter.
 |
005
- Power off the system.
- Remove the Graphics Memory Expansion Card from the
  Enhanced Graphics Adapter.
- Install the Enhanced Graphics Adapter without the expansion
  card.
- Power on the system.

**DOES THE SAME FAILURE OCCUR WITH THE
EXPANSION CARD REMOVED?**
Yes No
 | |
 | **006**
 | Go to Step 196 in this MAP.
 |
007
Replace the Enhanced Graphics Adapter.

008
(From Step 002 in this MAP)
The Advanced Diagnostics menu should be displayed on the
screen.

IS THE MENU READABLE?
Yes No
 | |
 | **009**
 | Go to Step 011 in this MAP.
 |
010
- Run the Enhanced Graphics Adapter tests. Use the **(RUN
  TESTS ONE TIME)** option.
(Step 010 continues)

010 (continued)
- Continue with Step 011 in this MAP.

011
(From Steps 009 and 010 in this MAP)
IS THE SCREEN DARK (NO ILLUMINATION)?
Yes   No
 │   │
 │   **012**
 │   Refer to the step indicated for the type of display attached
 │   to the Enhanced Graphics Adapter.
 │
 │   • IBM Enhanced Color Display - Step 024 in this MAP.
 │   • IBM Color Display - Step 083 in this MAP.
 │   • IBM Monochrome Display - Step 126 in this MAP.
 │   • Non-IBM display - Step 152 in this MAP.
 │

013
**DO YOU HAVE AN IBM MONOCHROME DISPLAY
ATTACHED TO THE ENHANCED GRAPHICS ADAPTER?**
Yes   No
 │   │
 │   **014**
 │   Go to Step 016 in this MAP.

015
Go to Step 152 in this MAP.

016
(From Step 014 in this MAP)
- Power on the display.

IS THE POWER-ON INDICATOR LIT?
Yes   No
 │   │
 │   **017**
 │   Go to Step 021 in this MAP.

018
(Step 018 continues)

018 (continued)
- Power off the system.
- Power off the display.
- Disconnect the display signal cable from the back of the Enhanced Graphics Adapter.
- Power on the display.

IS THE DISPLAY STILL DARK (NO ILLUMINATION)?
Yes   No
 | |
 | **019**
 | Go to Step 191 in this MAP.
 |
020
Replace the display.

021
(From Step 017 in this MAP)
- Check the continuity of the display power cord.

DOES THE POWER CORD HAVE CONTINUITY?
Yes   No
 | |
 | **022**
 | Replace the power cord.
 |
023
Replace the display.

024
(From Step 012 in this MAP)
IS THE COLOR DISPLAY AND ENHANCED GRAPHICS ADAPTER TEST MENU STABLE?
Yes   No
 | |
 | **025**
 | Go to Step 152 in this MAP.
 |
026
(Step 026 continues)

026 (continued)
IS THE SCREEN READABLE?
Yes   No
| |
| **027**
| Go to Step 191 in this MAP.
|
028
IS THE CURSOR VISIBLE AND POSITIONED AT THE END
OF THE LAST LINE OF THE MENU?
Yes   No
| |
| **029**
| Go to Step 191 in this MAP.
|
030
IS THE VERTICAL SIZE OF THE IMAGE ON THE SCREEN
CORRECT?
Yes   No
| |
| **031**
| Adjust the vertical size, then continue with Step 032 in this
| MAP.
|
032
(From Step 031 in this MAP)
IS THE IMAGE ON THE SCREEN DISTORTED OR THE
WRONG SIZE? (Figure 1 on page 2400-6)

2400

| Too Dim | Too Wide | Too Narrow |

| Too Short | Shrunken | Tilted |

| Changes Size When Brightness Control Turned | Out of Focus | Characters Shifted Left or Right, or Up or Down, Off the Display Area |

Figure 1. Distorted Images

Yes   No
| |
| **033**
| Go to Step 035 in this MAP.
|
034
Replace the display.

035
(From Step 033 in this MAP)
- Select **10** then press **Enter**.

IS THE AMOUNT OF GRAPHICS MEMORY DISPLAYED CORRECT?
Yes No
 | |
 | **036**
 | - Press **N** then **Enter**.
 | - Type in the correct amount of memory installed, then
 | press **Enter**.
 | Go to Step 037 in this MAP.
 |
037
(From Step 036 in this MAP)
- Press **Y** then **Enter**.
The display adapter and memory test should run without an error
code. If this test runs successfully, the Display Attributes screen
appears.

DID YOU RECEIVE AN ERROR CODE?
Yes No
 | |
 | **038**
 | Go to Step 040 in this MAP.
 |
039
Go to Step 188 in this MAP.

040
(From Step 038 in this MAP)
- Turn the Brightness control counterclockwise. The brightness
  should decrease.
- Turn the Brightness control clockwise. The brightness should
  increase.
- Pull out and turn the Contrast control counterclockwise. The
  brightness of the characters should decrease.
- Turn the Contrast control clockwise. The brightness of the
  characters should increase.
- Push the Contrast control in. The screen should return to a
  preset value.

(Step 040 continues)

2400

040 (continued)
DO THE CONTROLS WORK PROPERLY?
Yes   No
| |
| **041**
| Replace the Enhanced Color Display.
|
042
The Display Attributes screen should be displayed.
-   Adjust the brightness and contrast controls until the
    intensified line is brighter than the other lines.
-   Check the following items on the first Display Attributes
    screen:

    •   The appearance of each line on the display should match
        the description on that same line.
    •   The red bar should display light red, red, and dark red,
        from left to right.
    •   The green bar should display light green, green and dark
        green, from left to right.
    •   The blue bar should display light blue, blue, and dark blue
        from left to right.
    •   The gray bar should display light gray, gray and white
        from left to right.

IS THE FIRST DISPLAY ATTRIBUTES SCREEN CORRECT?
Yes   No
| |
| **043**
| Go to Step 045 in this MAP.
|
044
Go to Step 048 in this MAP.

045
(From Step 043 in this MAP)
You indicated that there was a problem with the first Display
Attributes screen.

(Step 045 continues)

045 (continued)
IS THE PROBLEM WITH THE COLORS?
Yes No
  │   │
  │   **046**
  │   Go to Step 191 in this MAP.
  │
047
Replace the display.

048
(From Step 044 in this MAP)
- Press **Y** then **Enter**.
The second Display Attributes screen should appear.
- Adjust the brightness and contrast controls until the intensified line is brighter than the other lines.
- Check the following items on the second Display Attributes screen:

  • All colors should be present and of the correct hue.
  • The appearance of each line on the display should match the description on that same line.
  • Each color bar should display two shades of the color.

    Note: The BROWN color bar displays brown over yellow. The WHITE color bar displays gray over white.

IS THE SECOND DISPLAY ATTRIBUTES SCREEN CORRECT?
Yes No
  │   │
  │   **049**
  │   Go to Step 051 in this MAP.
  │
050
Go to Step 054 in this MAP.

051

(From Step 049 in this MAP)
You indicated that there was a problem with the second Display
Attributes screen.

IS THE PROBLEM WITH THE COLORS?
Yes No

052
Go to Step 191 in this MAP.

053
Replace the display.

054

(From Step 050 in this MAP)
- Press **Y** then **Enter**.

**IS THE BORDER BLACK AND ARE CHARACTERS OF THE
CHARACTER SET SCREEN PRESENT AND COMPLETE?**
Yes No

055
Go to Step 191 in this MAP.

056
- Press **Y** then **Enter**.

**IS THE BORDER BLACK AND ARE THE CHARACTERS OF
THE 80X25 DISPLAY SCREEN PRESENT AND COMPLETE?**
Yes No

057
Go to Step 191 in this MAP.

058
- Press **Y** then **Enter**.

(Step 058 continues)

058 (continued)
**IS THE BORDER BLACK AND ARE THE CHARACTERS OF
THE 40X25 DISPLAY SCREEN PRESENT AND COMPLETE?**
Yes   No
 | |
 | **059**
 | Go to Step 191 in this MAP.
 |
060
- Press **Y** then **Enter**.
The 320X200 Graphics Color Set 0 screen appears.
The background should be dark cyan. From left to right the
boxes should be intensified green, intensified red, and intensified
yellow. The characters should be intensified yellow.

IS THE GRAPHICS DISPLAY CORRECT?
Yes   No
 | |
 | **061**
 | Go to Step 191 in this MAP.
 |
062
- Press **Y** then **Enter**.
The 320X200 Graphics Color Set 1 screen appears.
The background should be intensified red. From left to right the
boxes should be dark cyan, dark magenta, and non-intensified
white (light gray).
The characters should be dark magenta.

IS THE GRAPHICS DISPLAY CORRECT?
Yes   No
 | |
 | **063**
 | Go to Step 191 in this MAP.
 |
064
- Press **Y** then **Enter**.
The 640X200 Graphics screen appears.
The background should be black. From left to right the boxes
should be gray, gray, and white.
The characters are printed in white.

(Step 064 continues)

064 (continued)
IS THE GRAPHICS DISPLAY CORRECT?
Yes   No
| |
| **065**
| Go to Step 191 in this MAP.
|
066
-   Press **Y** then **Enter**.
The 640X200 16-color Graphics screen appears.
The background should be black.
Each color bar should match the description beneath it.

IS THE GRAPHIC DISPLAY CORRECT?
Yes   No
| |
| **067**
| Go to Step 191 in this MAP.
|
068
DO YOU HAVE A GRAPHICS MEMORY EXPANSION CARD INSTALLED?
Yes   No
| |
| **069**
| Go to Step 071 in this MAP.
|
070
Go to Step 074 in this MAP.

071
(From Step 069 in this MAP)
-   Press **Y** then **Enter**.
The 640X350 4-Color Graphics screen appears.
The background should be black.
From left to right the boxes should be blue, red, and white.

IS THE GRAPHICS DISPLAY CORRECT?
Yes   No
| |
| (Step 072 continues)

072
Go to Step 191 in this MAP.

073
Go to Step 076 in this MAP.

074
(From Step 070 in this MAP)
- Press **Y** then **Enter**.
- The 640X350 16-Color Graphics screen appears.

The background should be black.
The 16 color bars should match the description written below them.

IS THE GRAPHIC DISPLAY CORRECT?
Yes   No
          |
          075
          Go to Step 191 in this MAP.

076
(From Step 073 in this MAP)
- Press **Y** then **Enter**.

The Light Pen Test screen appears.

DO YOU HAVE A LIGHT PEN INSTALLED?
Yes   No
          |
          077
          Press **N** then **Enter** then go to Step 080 in this MAP.

078
This is a timed test. If you wait longer than 60 seconds to respond or if you are not careful where you place the tip of the pen before you push it, you may receive an error message.
- Press **Y** then **Enter** to start the test.
- Position the tip of the light pen in the center of the block and press the pen toward the display.

The displayed block will be replaced by an asterisk.
- Repeat this procedure for each new block that appears.

(Step 078 continues)

078 (continued)
WERE YOU ABLE TO COMPLETE THE LIGHT PEN TEST?
Yes   No
 │   │
 │   **079**
 │   Replace the light pen.
 │

080
(From Step 077 in this MAP)
Video Page 0 is displayed.
- Press any key to display the next page.
- Repeat the preceding step until eight pages have been displayed.

WERE ALL EIGHT PAGES DISPLAYED?
Yes   No
 │   │
 │   **081**
 │   Go to Step 191 in this MAP.
 │

082
You have successfully completed the Advanced Diagnostic tests. If you suspect an intermittent problem, start an error log. If you need instructions, refer to the Reference manual.

083
(From Step 012 in this MAP)

IS THE COLOR DISPLAY AND ENHANCED GRAPHICS ADAPTER TEST MENU STABLE?
Yes   No
 │   │
 │   **084**
 │   Adjust the vertical hold. If you do not have a stable screen after adjusting the vertical hold, go to Step 152 in this MAP.
 │

085
(Step 085 continues)

085 (continued)
IS THE SCREEN READABLE?
Yes   No
 │   │
 │   **086**
 │   Go to Step 191 in this MAP.
 │
087
IS THE CURSOR VISIBLE AND POSITIONED AT THE END
OF THE LAST LINE OF THE MENU ON THE DISPLAY?
Yes   No
 │   │
 │   **088**
 │   Go to Step 191 in this MAP.
 │
089
IS THE VERTICAL SIZE OF THE IMAGE ON THE SCREEN
CORRECT?
Yes   No
 │   │
 │   **090**
 │   Adjust the vertical size, then continue with Step 091 in this
 │   MAP.

091
(From Step 090 in this MAP)
IS THE IMAGE ON THE SCREEN DISTORTED OR THE
WRONG SIZE? (Figure 2 on page 2400-16)

Too Dim	Too Wide	Too Narrow
Too Short	Shrunken	Tilted
Changes Size When Brightness Control Turned	Out of Focus	Characters Shifted Left or Right, or Up or Down, Off the Display Area

Figure 2.   Distorted Images

Yes   No

|
| 092
| Go to Step 094 in this MAP.
|
093
Replace the display.

094
(From Step 092 in this MAP)
-   Select **10** then press **Enter.**

(Step 094 continues)

094 (continued)
**IS THE AMOUNT OF GRAPHICS MEMORY DISPLAYED
CORRECT?**
Yes   No
 | |
 | **095**
 | - Press N then **Enter.**.
 | - Type in the correct amount of memory installed then
 | press **Enter.**
 | Go to Step 096 in this MAP.
 |
096
(From Step 095 in this MAP)
- Press Y then **Enter.**.
The display adapter and memory test should run without an error
code being displayed. If this test runs successfully, the Display
Attributes screen appears.

DID YOU RECEIVE AN ERROR CODE?
Yes   No
 | |
 | **097**
 | Go to Step 099 in this MAP.
 |
098
Go to Step 188 in this MAP.

099
(From Step 097 in this MAP)
The Display Attributes screen should appear.
- Check the following items on the Display Attributes screen:

  • All colors should be present and of the correct hue.
  • Adjust the brightness and contrast controls until the
    intensified line is brighter than the other lines.
  • The appearance of each line on the display should match
    the description on that same line.
  • Each color bar should display two shades of the color.

      Note: The BROWN color bar displays brown
      over yellow. The WHITE color bar displays gray
      over white.

(Step 099 continues)

099 (continued)
IS THE DISPLAY ATTRIBUTES SCREEN CORRECT?
Yes   No
 | |
 | **100**
 | Go to Step 102 in this MAP.
 |
101
Go to Step 105 in this MAP.

102
(From Step 100 in this MAP)

**IS THE PROBLEM WITH THE FIRST DISPLAY
ATTRIBUTES SCREEN THE COLORS?**
Yes   No
 | |
 | **103**
 | Go to Step 191 in this MAP.
 |
104
Replace the display.

105
(From Step 101 in this MAP)
-   Press **Y** then **Enter**.

**ARE ALL CHARACTERS OF THE CHARACTER SET
SCREEN PRESENT AND COMPLETE?**
Yes   No
 | |
 | **106**
 | Go to Step 191 in this MAP.
 |
107
-   Press **Y** then **Enter**.

**IS THE BORDER OF THE 80X25 DISPLAY SCREEN BLACK
AND ARE THE CHARACTERS PRESENT AND COMPLETE?**
Yes   No
 | |
 | (Step 108 continues)

108
Go to Step 191 in this MAP.

109
- Press **Y** then **Enter**.

**IS THE BORDER OF THE 40X25 DISPLAY SCREEN BLACK
AND ARE THE CHARACTERS PRESENT AND COMPLETE?**
Yes No

110
Go to Step 191 in this MAP.

111
- Press **Y** then **Enter**.
The 320X200 Graphics Color Set 0 screen appears.
The background should be dark cyan. From left to right the
boxes should be intensified green, intensified red, and intensified
yellow. The characters should be intensified yellow.

IS THE GRAPHICS DISPLAY CORRECT?
Yes No

112
Go to Step 191 in this MAP.

113
- Press **Y** then **Enter**.
The 320X200 Graphics Color Set 1 screen appears.
The background should be intensified red. From left to right the
boxes should be dark cyan, dark magenta, and non-intensified
white (light gray).
The characters should be dark magenta.

IS THE GRAPHICS DISPLAY CORRECT?
Yes No

114
Go to Step 191 in this MAP.

115
(Step 115 continues)

115 (continued)
- Press **Y** then **Enter**.
The 640X200 Graphics screen appears.
The background should be black. From left to right the boxes
should be gray, gray, and white.
The characters are printed in white.

IS THE GRAPHICS DISPLAY CORRECT?
Yes No
 | |
 | **116**
 | Go to Step 191 in this MAP.
 |

117
- Press **Y** then **Enter**.
The 640X200 16 of 64 Color Graphics screen appears.
The background should be black.
Each color bar should match the description beneath it.

IS THE GRAPHIC DISPLAY CORRECT?
Yes No
 | |
 | **118**
 | Go to Step 191 in this MAP.
 |

119
- Press **Y** then **Enter**.
The Light Pen Test screen appears.

DO YOU HAVE A LIGHT PEN INSTALLED?
Yes No
 | |
 | **120**
 | Press **Y** then **Enter** then go to Step 123 in this MAP.
 |

121
This is a timed test. If you wait longer than 60 seconds to
respond or if you are not careful where you place the tip of the
pen before you push it, you may receive an error message.
- Press **N** then **Enter** to start the test.
- Position the tip of the light pen in the center of the block and
  press the pen toward the display.
(Step 121 continues)

121 (continued)

The displayed block will be replaced by an asterisk.

- Repeat this procedure for each new block that appears.

WERE YOU ABLE TO COMPLETE THE LIGHT PEN TEST?

Yes   No

| |

| **122**

| Replace the light pen.

|

123

(From Step 120 in this MAP)

Video Page 0 is displayed.

- A total of eight video pages will be displayed. Press any key to display the next page.

WERE ALL EIGHT PAGES DISPLAYED?

Yes   No

| |

| **124**

| Go to Step 191 in this MAP.

|

125

You have successfully completed the Advanced Diagnostic tests. If you suspect an intermittent problem, start an error log. If you need instructions, refer to the Reference manual.

126

(From Step 012 in this MAP)

IS THE IBM MONOCHROME DISPLAY AND ENHANCED GRAPHICS ADAPTER TEST MENU STABLE?

Yes   No

| |

| **127**

| Go to Step 152 in this MAP.

|

128

(Step 128 continues)

128 (continued)
IS THE SCREEN READABLE?
Yes   No
 │   │
 │   **129**
 │   Go to Step 191 in this MAP.
 │
130
**IS THE CURSOR VISIBLE AND POSITIONED AT THE END
OF THE LAST LINE OF THE MENU?**
Yes   No
 │   │
 │   **131**
 │   Go to Step 191 in this MAP.
 │
132
**IS THE IMAGE ON THE SCREEN DISTORTED OR THE
WRONG SIZE? (Figure 3 on page 2400-23)**

Too Dim	Too Wide	Too Narrow

Too Short	Shrunken	Tilted

Changes Size When Brightness Control Turned	Out of Focus	Characters Shifted Left or Right, or Up or Down, Off the Display Area

Figure 3.   Distorted Images

Yes   No

133
Go to Step 135 in this MAP.

134
Replace the display.

135

(From Step 133 in this MAP)
- Select **10** then press **Enter**.

IS THE AMOUNT OF GRAPHICS MEMORY DISPLAYED CORRECT?

Yes No

    136
- Press **N** then **Enter**.
- Type in the correct amount of memory installed, then press **Enter**

    Go to Step 138 in this MAP.

137

Press **Y** then **Enter**. Go to Step 138 in this MAP.

138

(From Steps 136 and 137 in this MAP)
The display adapter and memory test should run without an error code being displayed. If this test runs successfully, the Display Attributes screen appears.

DID YOU RECEIVE AN ERROR CODE?

Yes No

    139
    Go to Step 141 in this MAP.

140

Go to Step 188 in this MAP.

141

(From Step 139 in this MAP)
The Display Attributes screen should be displayed.
- Adjust the brightness and contrast controls until the intensified lines is brighter than the other lines.

The appearance of each line should match the description on that same line.

(Step 141 continues)

141 (continued)
IS THE DISPLAY ATTRIBUTES SCREEN CORRECT?
Yes   No
| |
| **142**
| Go to Step 191 in this MAP.

143
- Press **Y** then **Enter**.

**ARE ALL CHARACTERS OF THE CHARACTER SET
SCREEN PRESENT AND COMPLETE?**
Yes   No
| |
| **144**
| Go to Step 191 in this MAP.

145
- Press **Y** then **Enter**.

**ARE THE CHARACTERS OF THE 80X25 DISPLAY SCREEN
PRESENT AND COMPLETE?**
Yes   No
| |
| **146**
| Go to Step 191 in this MAP.

147
- Press **Y** then **Enter**.
The 640X350 Graphics screen should appear.
The background should be black.
From left to right the boxes should be green, green, and blinking.
The characters are green.

IS THE GRAPHIC DISPLAY CORRECT?
Yes   No
| |
| **148**
| Go to Step 191 in this MAP.

149
(Step 149 continues)

149 (continued)
- Press **Y** then **Enter.**
Video Page 0 is displayed.
- A total of eight video pages will be displayed. Press any key to
  display the next page. Look for any discrepancy in the
  sequence of numbers on the display.

WERE ALL EIGHT PAGES DISPLAYED CORRECTLY?
Yes   No
 | |
 | **150**
 | Go to Step 191 in this MAP.
 |
151
You have successfully completed the Advanced Diagnostic tests.
If you suspect an intermittent problem, start an error log. If you
need instructions, refer to the Reference manual.

152
(From Steps 012, 015, 025, 084, and 127 in this MAP)
- Power off the system.
- Disconnect all cables, devices, and wrap plugs from the
  asynchronous and alternate asynchronous adapters or other
  serial ports (if attached).
- Insert the Advanced Diagnostics diskette into drive A.
- Power on the system.
- Wait for the diskette to load.

> **Note:**   Use the numbers on the top row of the
> keyboard; do not use the numeric keypad .

- Press **0**.
- Press **Enter.**
- Wait for the Advanced Diagnostics program to load from the
  diskette.

DID YOU HEAR ONE BEEP?
Yes   No
 | |
 | **153**
 | Go to "MAP 0020: Power Start."
 |
(Step 154 continues)

154
IS THE ENHANCED GRAPHICS ADAPTER THE ONLY
DISPLAY ADAPTER INSTALLED?
Yes   No
 | |
 | **155**
 | Go to Step 157 in this MAP.

156
Go to Step 162 in this MAP.

157
(From Step 155 in this MAP)
IS A DISPLAY ATTACHED TO BOTH DISPLAY ADAPTERS?
Yes   No
 | |
 | **158**
 | Press **N** then **Enter.** Go to Step 160 in this MAP.

159
Press **Y** then **Enter.** Go to Step 160 in this MAP.

160
(From Steps 158 and 159 in this MAP)
DID YOU HEAR ONE BEEP?
Yes   No
 | |
 | **161**
 | Go to "MAP 0020: Power Start."

162
(From Step 156 in this MAP)
-   Press Y, then press **Enter.**

DID YOU HEAR ONE BEEP?
Yes   No
 | |
 | **163**
 | Go to "MAP 0020: Power Start."

(Step 164 continues)

164
- Press 0, then press **Enter**.

DID YOU HEAR ONE BEEP?
Yes   No
```
 |     |
 |     165
 |     Go to "MAP 0020: Power Start."
 |
```
166
- Type **24**, then press **Enter**.

DID YOU HEAR TWO BEEPS?
Yes   No
```
 |     |
 |     167
 |     Replace the Enhanced Graphics Adapter.
 |
```
168
**IS A COLOR DISPLAY ATTACHED TO THE ENHANCED
GRAPHICS ADAPTER?**
Yes   No
```
 |     |
 |     169
 |     Go to Step  179 in this MAP.
 |
```
170
- Disconnect the display signal cable.
- Type **11** then press **Enter**.
- Measure the voltage present at the 9-pin connector on the
  adapter between pin 1 (ground) and the pins shown in
  Figure 4 on page 2400-29.

Pin	Color	Enhanced in Normal Color	Enhanced in Enhanced Color
3	2.5 - 5.5 Vdc	2.5 - 5.5 Vdc	2.5 - 5.5 Vdc
4	2.5 - 5.5 Vdc	2.5 - 5.5 Vdc	2.5 - 5.5 Vdc
5	2.5 - 5.5 Vdc	2.5 - 5.5 Vdc	2.5 - 5.5 Vdc
6	2.5 - 5.5 Vdc	2.5 - 5.5 Vdc	2.5 - 5.5 Vdc
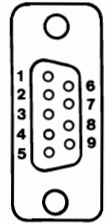
Adapter

Figure 4. Enhanced Graphics Adapter Tests
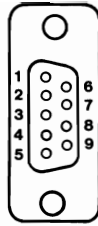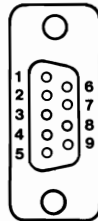
ARE THE VOLTAGES CORRECT?
Yes   No

171
Go to Step 191 in this MAP.

172
- Press **Enter**.
- Measure the voltage present at the 9-pin connector on the adapter between pin 1 (ground) and the pins shown in Figure 5.

Pin	Color	Enhanced in Normal Color	Enhanced in Enhanced Color
2	Ground	0.0 - 0.5 Vdc	0.0 - 0.5 Vdc
3	0.0 - 0.5 Vdc	0.0 - 0.5 Vdc	0.0 - 0.5 Vdc
4	0.0 - 0.5 Vdc	0.0 - 0.5 Vdc	0.0 - 0.5 Vdc
5	0.0 - 0.5 Vdc	0.0 - 0.5 Vdc	0.0 - 0.5 Vdc
6	0.0 - 0.5 Vdc	0.0 - 0.5 Vdc	0.0 - 0.5 Vdc
7	0.0 - 0.5 Vdc	0.0 - 0.5 Vdc	0.0 - 0.5 Vdc
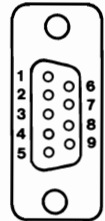
Adapter

Figure 5. Enhanced Graphics Adapter Tests

ARE THE VOLTAGES CORRECT?
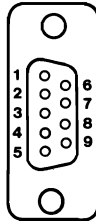Yes   No

(Step 173 continues)

173
Go to Step 191 in this MAP.

174
- Press 9 and wait for two beeps.
- Measure the voltage present at the 9-pin connector on the adapter, between pin 1 (ground) and the pins shown in Figure 6.

Pin	Color	Enhanced in Normal Color	Enhanced in Enhanced Color
8	0.0 - 0.7 Vdc	0.0 - 0.7 Vdc	0.0 - 0.7 Vdc
9	0.0 - 0.4 Vdc	2.4 - 5.5 Vdc	2.4 - 5.5 Vdc
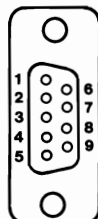
Adapter

Figure 6.   Enhanced Graphics Adapter Tests

ARE THE VOLTAGES CORRECT?
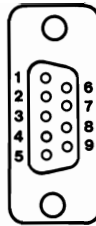**Yes   No**

175
Go to Step 191 in this MAP.

176
- Type **12** then press **Enter**.
- Measure the voltage present at the 9-pin connector on the adapter, between pin 1 (ground) and the pins shown in Figure 7 on page 2400-31.

Pin	Color	Enhanced in Normal Color	Enhanced in Enhanced Color
8	0.8 - 1.5 Vdc	1.5 - 2.5 Vdc	1.5 - 2.5 Vdc
9	0.5 - 1.0 Vdc	0.5 - 1.0 Vdc	2.4 - 5.5 Vdc

Adapter

Figure 7.   Enhanced Graphics Adapter Tests

ARE THE VOLTAGES CORRECT?
Yes   No

177
Go to Step 191 in this MAP.

178
Replace the color display.

179
(From Step 169 in this MAP)
- Disconnect the monochrome display signal cable.
- Type **11** then press **Enter**.
- Measure the voltage at the 9-pin connector on the adapter, between pin 1 (ground) and the pins shown in Figure 8 on page 2400-32.

Pins	Voltage
6	2.4 - 3.8 Vdc
7	2.4 - 3.8 Vdc

Adapter

Figure 8.   Enhanced Graphics Adapter Tests

ARE THE VOLTAGES CORRECT?
Yes   No

    180
    Go to Step 191 in this MAP.

181
- Press **Enter**.
- Measure the voltage present at the 9-pin connector on the adapter, between pin 1 (ground) and the pins shown in Figure 9.

Pins	Voltage
6	0.0 - 0.5 Vdc
7	0.0 - 0.5 Vdc

Adapter

Figure 9.   Enhanced Graphics Adapter Tests

(Step 181 continues)

181 (continued)
ARE THE VOLTAGES CORRECT?
Yes   No
│   │
│   **182**
│   Go to Step 191 in this MAP.
│
183
- Press **Enter** and wait for two beeps.
- Measure the voltage at the 9-pin connector on the adapter, between pin 1 (ground) and the pins shown in Figure 10.

Pins	Voltage
8	0.4 - 1.1 Vdc
9	3.0 - 4.2 Vdc

Adapter

Figure 10.   **Enhanced Graphics Adapter Tests**

ARE THE VOLTAGES CORRECT?
Yes   No
│   │
│   **184**
│   Go to Step 191 in this MAP.
│
185
- Select **12** then press **Enter**.
- Measure the voltage at the 9-pin connector on the adapter, between pin 1 (ground) and the pins shown in Figure 11 on page 2400-34.

Pins	Voltage
8	0.4 - 1.1 Vdc
9	3.0 - 4.2 Vdc

Adapter

Figure 11. Enhanced Graphics Adapter Tests

ARE THE VOLTAGES CORRECT?
Yes   No
 │   │
 │   **186**
 │   Go to Step 191 in this MAP.
 │
187
Replace the monochrome display.

188
(From Steps 039, 098, and 140 in this MAP)
You may have received an error message containing the phrase
"FAILING GRAPHICS MEMORY XXX XXX" (XXX XXX is a
six-digit number).

DID YOU RECEIVE THIS ERROR MESSAGE?
Yes   No
 │   │
 │   **189**
 │   Go to Step 191 in this MAP.
 │
190
Go to Step 206 in this MAP.

191
(From Steps 019, 027, 029, 046, 052, 055, 057, 059, 061, 063,
065, 067, 072, 075, 081, 086, 088, 103, 106, 108, 110, 112, 114,
116, 118, 124, 129, 131, 142, 144, 146, 148, 150, 171, 173, 175,
177, 180, 182, 184, 186, and 189 in this MAP)

**DO YOU HAVE A GRAPHICS MEMORY EXPANSION CARD
INSTALLED?**
Yes No
 | |
 | **192**
 | Replace the Enhanced Graphics Adapter.
 |

193
- Remove the Graphics Memory Expansion Card from the
  Enhanced Graphics Adapter.
- Install the Enhanced Graphics Adapter without the Graphics
  Memory Expansion card.
- Power on the system.
- Rerun the failing diagnostic test.

**DID THE SAME FAILURE OCCUR WITH THE EXPANSION
CARD REMOVED?**
Yes No
 | |
 | **194**
 | Go to Step 196 in this MAP.
 |

195
Replace the Enhanced Graphics Adapter.

196
(From Steps 006 and 194 in this MAP)
- Refer to Figure 12 on page 2400-37 and remove the memory
  modules from bank 03.

**DID THE SAME FAILURE OCCUR WITH THE MODULES
REMOVED?**
Yes No
 | |
 | (Step 197 continues)

197
Replace the eight memory modules in bank 03. Rerun the diagnostic tests to verify the fix. If this does not correct the problem, replace the Graphics Memory Expansion Card.

198
- Refer to Figure 12 on page 2400-37 and remove the modules installed in bank 02.

DID THE SAME FAILURE OCCUR WITH THE MODULES REMOVED?
Yes   No
    |
    199
    Replace the eight memory modules in bank 02. Rerun the diagnostic tests to verify the fix. If this does not correct the problem, replace the Graphics Memory Expansion Card.

200
- Refer to Figure 12 on page 2400-37 and remove the modules installed in bank 01.

DID THE SAME FAILURE OCCUR WITH THE MODULES REMOVED?
Yes   No
    |
    201
    Replace the eight memory modules in bank 01. Rerun the diagnostic tests to verify the fix. If this does not correct the problem, replace the Graphics Memory Expansion Card.

202
Replace the Graphics Memory Expansion Card.

203
(From Step 210 in this MAP)
You have received a **"FAILING GRAPHICS MEMORY"** error message followed by a six-digit error code. If the first two digits are **00** or the last two digits are **11**, it indicates a failure on the Enhanced Graphics Adapter.

(Step 203 continues)

203 (continued)
**ARE THE FIRST TWO DIGITS OF THE ERROR CODE 00,
OR THE LAST TWO DIGITS 11?**
Yes   No
 | |
 | **204**
 | Go to Step 206 in this MAP.
 |
205
Replace the Enhanced Graphics Adapter.

206
(From Steps 190 and 204 in this MAP)
The first two digits of the error code identify the bank that has
the failing module. The third and fourth digits identify the row.
The last two digits identify the position (left or right) of the
module.
For example, error code **020301** corresponds to a failing module
identified as being in bank **02** row **03**, in the **right** (01) module
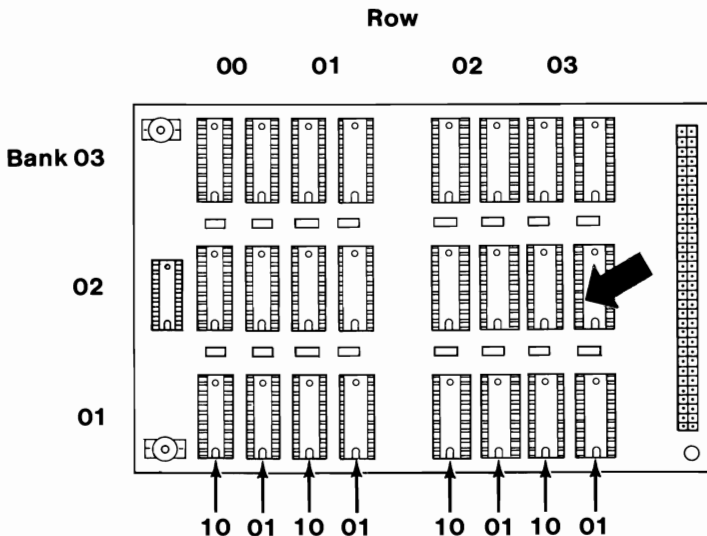position. This is shown by the arrow in Figure 12.

Figure 12.   Module Location

(Step 206 continues)

206 (continued)
Replace the failing graphics memory module. Go to Step 001 in this MAP and rerun the Enhanced Graphics Adapter diagnostic tests. After the tests are complete, continue with Step 207 in this MAP.

207
(From Step 206 in this MAP)
DID YOU RECEIVE A GRAPHICS MEMORY ERROR CODE?
Yes   No

    208
    The system is functioning correctly.

209
IS THE NEW ERROR CODE IDENTICAL TO THE PREVIOUS ERROR CODE?
Yes   No

    210
    There is another failing Graphics Memory Module. Go to Step 203 in this MAP and follow that procedure again.

211
Replace the Graphics Memory Expansion Card.