Apple High Resolution RGB Monitor: Technical Q&A

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TOPIC --

I have some technical questions about the Apple 13-inch High-Resolution RGB
monitor:

1) What is the pixel size?

2) What's the pixel interleave?

3) How much time does it take to turn pixels on and off?

4) What's the wavelength range from blue to red?

5) What's the maximum brightness of the screen?

6) Can the Macintosh hardware handle programming to command video
    cards to display objects on the desktop (circles, squares, and so
    on, with different colors?)

DISCUSSION ---

1) Pixel size (also known as "dot pitch" or "grill pitch") is 0.25mm.

2) There are no specifications on pixel interleave. If the request is
   for the sequence of placing pixels on the screen, then the following
   discussion should assist in understanding how the monitor works.

   Video cards that drive the AppleColor High Resolution RGB Monitor
   use an approximation of the RS343 display signal. (RS video standards
   are set by the Electronic Industries Association.) The RS343 display
   standard is essentially a monochrome video signal combined with a
   composite sync signal (horizontal and vertical scan control) with
   timings that produce a non-interlace, or progressive, scan. This means
   that the horizontal and vertical scan rates are timed to cause the
   display electron guns to produce even progressively horizontal scans.
   This is by comparison to the interlaced video standards. The importance
   of the RS343 standard is its provision for a timing and voltage level

signal that allows the display and generation of high resolution video.

While the Macintosh II version of the RS343 signal varies somewhat, it essentially follows the guidelines necessary for connection to RS343 display devices. The major differences are:

• the separate TTL level composite sync signal found on pin 3
• the separate video lines used to produce RGB color
• a vertical scan rate of 66.67Hz to reduce screen flicker
• a voltage white level of 1 volt for its red and blue signals and 1.3 volts on its green signal

RS343 provides for a 60hz signal but has been changed to 66.67Hz on the Macintosh II Video Card, to prevent the screen flicker visible at 60Hz.

3) The pixel clock frequency is 30.24 MHz. The only other specification that would appear to relate to this issue is phosphor persistence, which is rated by phosphor vendors as medium-short.

4) Due to contractual agreements, this information is not available.

5) Luminance level is 20 footlamberts with the brightness control in the center detent position. With the brightness control in the full-open position, the luminance level is 25 footlamberts.

6) The Macintosh firmware (the Macintosh Toolbox) has QuickDraw routines to handle the creation of the desired objects. Typically, the video cards are not "commanded" to display objects. Video cards will display the information that is placed in the video buffer. QuickDraw is used to place the information in that video buffer. The only possible exception is when a graphics coprocessor card is placed in the Macintosh. However, the Macintosh interface to these specialized video cards is still through QuickDraw. Although, now QuickDraw is being executed by the graphics coprocessor, not by the system's primary CPU.

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