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Macintosh Quadra 840AV: Horizontal Line in Captured Video (3/94)

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TOPIC -----

When displaying live video from a video camera, or in a captured frame or movie on a Quadra 840AV there appears to be a horizontal line going through the image. It is more noticeable on curves or diagonal lines in the image.

The line stays in the same position so it doesn't appear to be a sync problem. I don't seem to get the same problem when capturing from a VCR. Is this a known issue?

DISCUSSION -----

What you are seeing is a scaling artifact, and is normal in some situations. It may be seen whenever an image is scaled vertically; but it should be most noticeable when the image is scaled vertically so that it is smaller than full size and greater than half.

The scaler works by low-pass filtering and subsampling. In the vertical dimension, this means that some of the horizontal scan lines are dropped, but the data contained in the dropped lines is averaged into the remaining lines. This averaging minimizes the dropped line effect, but it is not perfect; it is an approximation of perfect (you may see perfectly scaled images on television, but the equipment that does this costs thousands more than the entire computer).

In the case where an image is scaled vertically by less than full but greater than half, the image displayed on the screen consists of two video fields interlaced onto the monitor. The video scaling processes fields and it takes two fields to make a frame. When a line is dropped in one field, the corresponding line in the opposite field is also dropped. When the two fields are reconstructed on the display, the effect is that two vertically adjacent lines are dropped, and this can be visible in some cases.

The most likely reason it is not as visible when using a VCR is that the

image from a VCR is lower resolution from the filtering done in the recording process. The artifact is still there, but the lower resolution hides it.

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