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Macintosh LC II: Doesn't Support 65.5K Colors

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TOPIC -----

Why doesn't the Macintosh LC II support 2^{16} (= 65.5K, or 65,536) colors?

DISCUSSION -----

All video timing modes use a 256 x 24 Color Look-Up Table (CLUT). Monochrome mode also uses the CLUT, driving the R, G, and B with the same signal. When you select the thousands of colors mode in the monitor CDEV, you are selecting 16 bit/pixel format. The 16 bit/pixel assigns the uppermost bit to an Alpha Channel and 5 bits each for Red, Green, and Blue.

Selecting thousands mode divides the 256 x 24 CLUT into three 32 x 8 tables, allowing display of 32 levels of each color from a selection of 256. The 555 data is applied to each of these tables, resulting in 888 output values. The CLUT is used so that gamma correction can be applied, even in the direct color mode. Therefore, you will get $2^{16}-1 = 32^3 = 32.7K$ color selections from a palette of $2^{24} = 16.7$ million color choices.

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