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## Apple Displays: Gamma Numbers Associated w/ Gamma Tables (6/95)

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TOPIC -----

I am looking for the specific gamma numbers associated with the gamma tables; standard, uncorrected, and page white.

DISCUSSION -----

I assume you are referring to the gamma option settings in the Monitor control panel. Below is a little background for gamma correction and the Monitor control panel choices.

Background

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All CRTs have a non-linear relationship between light output and the video (cable) voltage input. The Monitor control panel gamma settings are used to correct non-linear light output for CRT type displays.

The gamma values that the Monitor control panel uses were originally derived for the first Macintosh RGB display from Apple. These values have been used since then, but may vary depending on the DAC/CLUT used in different Macintosh video circuitry. Also, many displays of the same model of any RGB monitor may show variances in gamma response due to the nature of CRTs and analog circuitry. Any mass produced display (Apple or non Apple) will have these variances.

The only method of obtaining accurate gamma response with any color display will be to use specialized light measurement devices with individual displays. The corrected gamma values that are given below are approximate values and can only be considered to be best estimates.

Uncorrected Gamma

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Uncorrected gamma provides a linear output for each of the red, green and blue video lines for stepped gray bars. This uncorrected gamma refers to the video signaling provided by the CPU and not the gamma value for the display.

Uncorrected or linear gamma always has a value of 1.0.

## Corrected Gammas

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### Macintosh Standard Gamma

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The gamma value of the Macintosh Standard gamma refers to the video signaling provided by the computer and not the gamma value for the display. Macintosh Standard Gamma provided a video output that would help to correct for the Apple Color RGB Displays non-linear gamma. The Macintosh Standard Gamma had a value of 0.7 when using an original Mac video card. This corrected for the displays gamma of 1.4.

### Page-white Gamma

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Page White Gamma provides a non-linear gamma video output to correct for display non-linearity similar to Macintosh standard gamma. The original Page White Gamma had a value of 0.7. This corrects for a display gamma of 1.4. Additionally, Page-White Gamma provides a shift in color balance attempting to maintain a 6500 degree white point and colorless gray shades with the Apple Color RGB Display. This color balance shift was designed to correct for the displays original white point of 9300 degrees.

When reading the above, it is important to differentiate between the gamma value of the video signal and the gamma value of the display. The corrected gamma in the video signal is designed to counteract the non-linear gamma response of a particular display. If someone needs values for a color correction application, any monitor gamma parameter value between 1.4 and 1.8 should be sufficient. If a specific value is desired, a safe choice would be 1.4 or 1.6.

I would recommend not to get concerned about specific and exact numbers because display variances are probably larger than the fractional differences between these numbers. Screen measurement and calibration products are much better if you need exact corrections.

Support Information Services

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