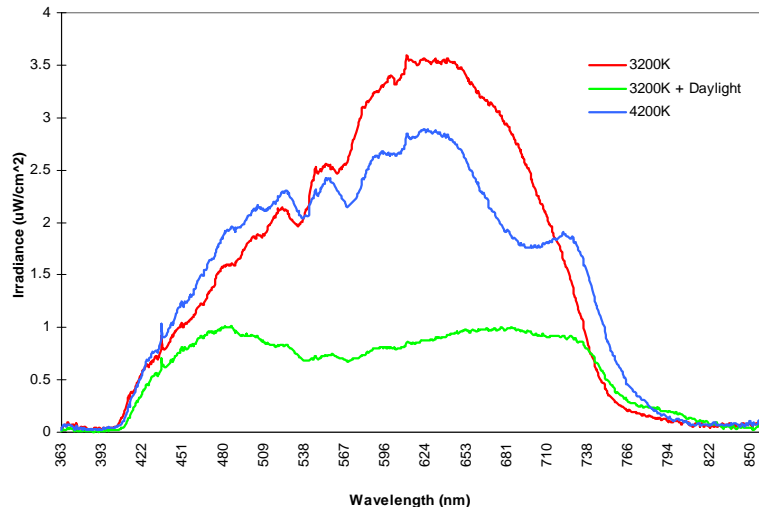


Technical Note: **106**

Question:

1. How can one get “whiter” light from Tungsten Halogen lamps?
2. How can I get better color balance from my color camera?



Answer:

The output from a standard Tungsten Halogen lamp has a color temperature of about 3200K. As can be seen from the graph, this lamp provides higher output in the red end of the spectrum and lower output in the blue end. The green graph shows the standard method for balancing the output of a 3200K lamp. A color shifting or balancing filter, sometimes called a daylight filter, can be used to flatten the output so that it has equal intensity over the entire visible range. As can be seen, this filter does a very good job but with a reduction in intensity near 60%. A 4200K lamp modifies the standard spectral output without the use of filters. While the output is not as flat as the daylight corrected spectra, it provides a much whiter light with only a 10% reduction in the overall intensity.

Result:

While the light from a standard 3200K lamp appears white to the human observer, a color CCD system will see a red rich image. This is in part due to the imbalance of spectral output from the lamp, and in part due to the wavelength dependent sensitivity of the standard silicon CCD sensor. The standard silicon detector has stronger sensitivity to red photons than to blue photons. Color systems gain significant advantages using color balanced lighting.

Illumination Technologies, Inc.

5 Adler Drive, East Syracuse, NY 13057 USA

TEL: 315-463-4673 FAX: 315-463-1401

E-mail: info@illuminationtech.com

<http://www.illuminationtech.com>