Performance Comparisons

Performance comparisons of a variety of LED solutions help to illustrate the differentiation of TriGain® products with the rest of the market. The target regions identified in the TM-30 system (**Figure 3**) are used to compare color quality, while the luminous efficacy of radiation (LER) is used to compare efficiency. LER is a measure of how efficient the spectrum inherently is at producing light, using the photopic curve in Figure 4, and helps to remove variations from electronics and optical design when comparing different sources.

Five LED sources have been chosen as representative of industry capability, including both standard and premium offerings. A nominal color temperature of 3500K is used for this analysis, however a similar comparison would result at other CCTs. The plots in **Figure 5** illustrate the selected spectra, including (a) industry standard 80 CRI, (b) industry standard 90 CRI, (c) premium "full-spectrum", (d) premium enhanced saturation, and (e) TriGain®.

One apparent difference in **Figure 5** is the red phosphor emission component. From the industry standard 80 CRI spectrum (a) through the premium enhanced saturation spectrum (d), the red phosphor emission is seen shifting further and further right to longer, less efficient wavelengths, while the TriGain® spectrum (e) has very little energy lost in the longer wavelengths. Another key factor of color quality is the distinction between the red (above ~600nm) and green (~500-550nm) components of the spectrum. There is little distinction in the standard 80 CRI spectrum (a), but that distinction grows in the more premium offerings. With TriGain® being so narrow, there is a natural distinction between the green and red emission peaks.

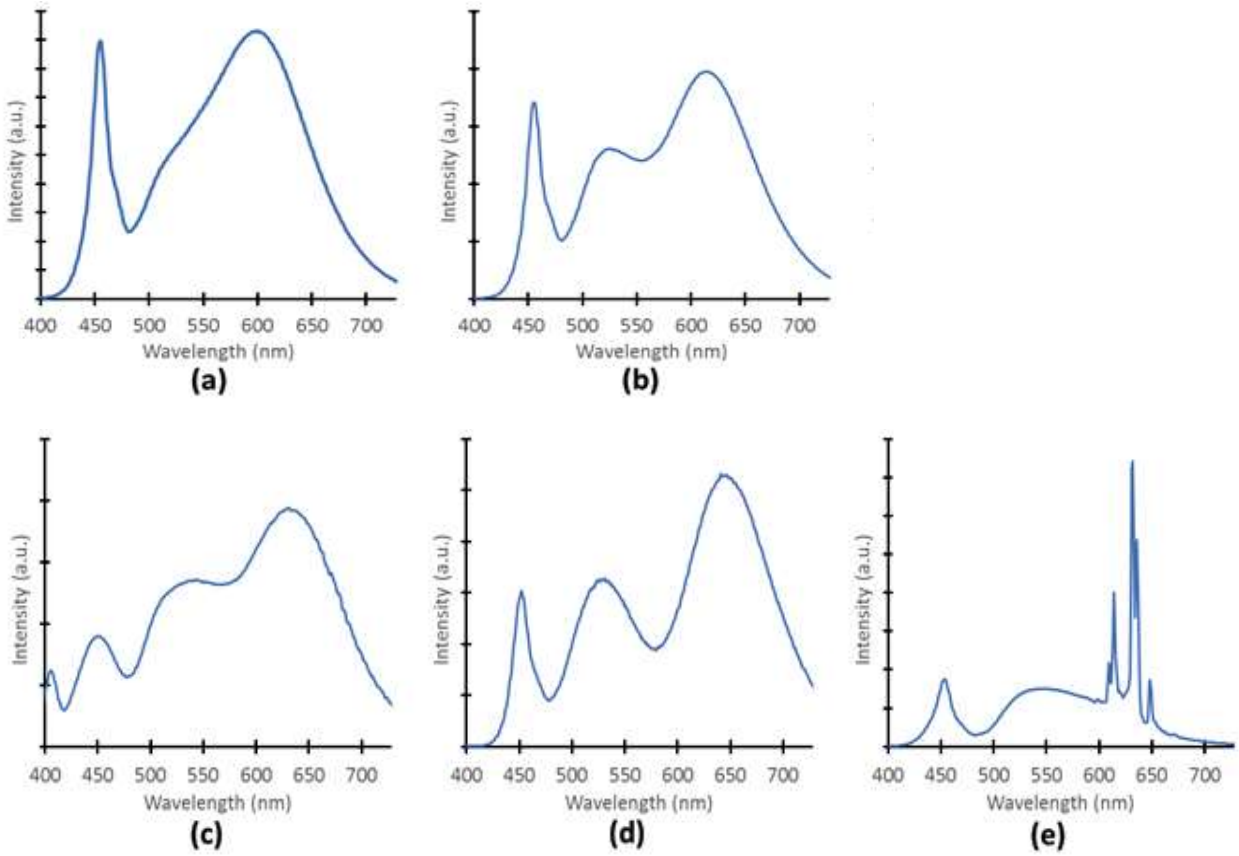

Figure 5: Spectral plots of five selected LED sources at 3500K for performance comparison including (a) industry standard 80 CRI, (b) industry standard 90 CRI, (c) premium "full-spectrum", (d) premium enhanced saturation, and (e) TriGain® .