Colorimetric Characterization Models for LCD and DLP™ Projectors

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Abstract

The widespread use of data projectors in more demanding imaging applications has emphasized the need for accurate methods of their color control. Projectors are relied upon in settings where color reproduction is increasingly important. Such application include: digital cinema; business applications; and presentations using color-critical items such as corporate logos and product marketing information. We have measured and characterized a set of 12 data projectors, each using either liquid crystal display (LCD) or Digital Light Processing™ display technologies. Each technology required a distinct model. LCD projectors are successfully modeled using established techniques, for LCD projectors and display screens as typically found in laptop computers. For the DLP devices, a new model has been generated incorporating the addition of a white channel. Colorimetric results are presented for both types of display technology for a series of projectors, with the more complex DLP modeling performing nearly as well as the simpler LCD modeling.

Biographical Information

David R. Wyble is a Color Scientist within the Munsell Color Science Laboratory. He received an MS in Color Science from RIT in 1998. His current research work is focused on color measurement and instrumentation. This includes various measurement-related projects, fundamentals of spectrophotometry, and teaching a graduate laboratory in Color Measurement. Prior to joining MCSL in 1997, he spent 15 years in research and development at the Xerox Corporation.