MAY
2015

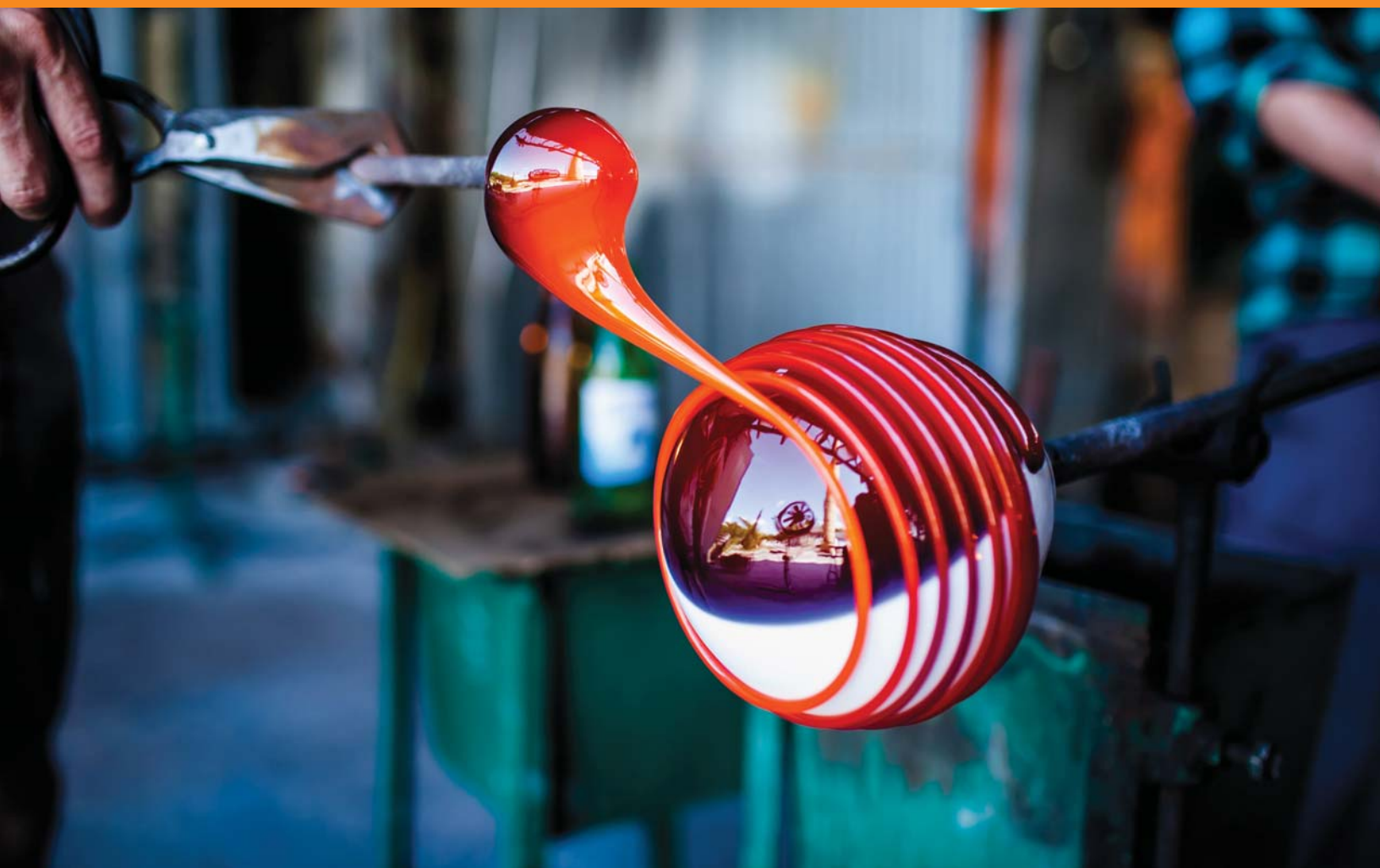
Caitlin Fjelsted

Understanding HDR

What the New Viewing Experience Means for Color Calibration

PROVIDED BY *SpectraCal, Inc.*

Simulated example of standard versus high dynamic range content.



Understanding HDR: What the New Viewing Experience Means for Color Calibration

By Caitlin Fjelsted, Communications Manager for SpectraCal, Inc.

If you were at NAB Show 2015 last month you probably couldn't help but hear at least some of the buzz over high dynamic range imaging (HDR, or HDRI) featured in booths such as Dolby, Canon and Sony.

While Dolby has its own version of HDR technology, called "Dolby Vision," HDR content in general is already bringing a number of changes to the post-production industry.

Also affected are the display manufacturers, who before long (if not already) will likely find themselves in an arms race for producing displays with increasingly brighter luminance capabilities.

Initial consumer displays will be able to produce about 1,000 nits, though organizations providing HDR standards for content mapping are preparing for the eventuality of up to 5,000 nits.

The challenge with HDR is finding a set of imaging standards that can be applied and adhered to across the post-production industry.

Dolby has been a leader in developing and establishing these standards, which they market along with their content mapping framework as Dolby Vision. Now most professionals using HDR displays apply the PQ transfer function developed by Dolby, which has been adopted by SMPTE (Society of Motion Picture and Television Engineers) as the SMPTE ST 2084 electo-optical transfer function (EOTF).

Colorspace is a trickier and as of yet unanswered question. Since the native colorspace of HDR-capable displays varies greatly, setting one to which they all must conform is no easy feat.

For post-production professionals grading HDR content, awareness of these standards and the controversies that surround them is a must. As these creatives foray into the world of unknowns that is HDR imaging they should be prepared to experiment with the various recommendations that will arise for grading and mapping HDR content.

> *“With HDR displays showing a greater range of color than has before been seen on screen, color calibrating the monitors used for viewing and grading HDR content is ever more crucial for the post-production industry.”*

For calibrating HDR reference displays, creative professionals will need not only software that supports the SMPTE ST 2084 EOTF, but also light measurement and signal generation hardware that can accurately read and generate patterns for HDR displays.

Most light measurement devices, including SpectraCal’s own C6 colorimeter, are capable of reading only 1,000 nits, a peak luminance that is already being surpassed by high-end monitors like the Canon DP-V3010.

Currently, the only colorimeters capable of reading luminance values higher than the projected 5,000 nits of future display technologies are the Colorimetry Research CR-100 and Klein K10-A.

Pattern generation is another challenge. The patterns, or color swatches, which are output to a display during calibrations, must be capable of triggering the display’s HDR mode. This means each test pattern must include embedded meta-data with proper HDR mapping.

So what does HDR imaging mean for color calibration? The demand for certain calibration software and hardware features, such as inclusion of the SMPTE ST 2084 EOTF standard and the ability to measure incredibly high peak luminance values, will undoubtedly increase. While the complexity of display calibration as a process will remain unchanged, post-production professionals will need greater awareness of the proper tools and standards necessary for calibrating HDR reference displays. Yet with HDR displays showing a greater range of color than has ever before been seen on screen, color calibrating the monitors used for viewing and grading HDR content is ever more crucial for the production and post-production industry ■

About SpectraCal

SpectraCal provides professional calibration software and hardware to ensure consistent color performance across all displays and monitors in the production and post-production industry. Their current clientele include Technicolor, NBC, Walt Disney Pictures, Deluxe and Red Digital Cinema.

To learn more about SpectraCal’s calibration products visit **www.SpectraCal.com.**