



REPORT FROM THE

STANDARDS VICE PRESIDENT



By Alan Lamshead

Update on Standards for UHD TV

One year ago I reported on some of the recent SMPTE standards work in relation to Ultra High Definition Television (UHD TV). SMPTE continues to be at the forefront of much of this technological revolution toward more, better and faster pixels. With this drive for more pixels, higher frame rates, higher contrast and dynamic range, there are a host of issues that need to be addressed. Let me update you on three of our current projects.

The 10E Technology Committee on Essence (TC 10E) is currently engaged in four leading-edge standards projects in extended dynamic range around new Electro-optical Transfer Functions of displays, based on the human vision system perceptual model as well as new standards for defining and conveying mastering environment color and luminance parameters. Two documents ST 2084, “High Dynamic Range Electro—Optical Transfer Function of Mastering Reference Displays” and ST 2086, “Mastering Display Color Volume Metadata Supporting High Luminance and Wide Color Gamut Images” were published in 2014. A third document ST 2085, “Y’D’ZD’X Color-Difference Computations for High Dynamic Range X’Y’Z’ Signals” is in the final approval stage and should be published shortly. A fourth project is developing standards for specifying the semantics and representation of content-dependent metadata needed for color volume transformation of high dynamic range and wide color gamut imagery to smaller color volumes (e.g., BT.709 or digital cinema) in mastering applications. In addition to these specific projects TC 10E is also undertaking a study group to look at the complete eco-system of high dynamic range and plans to submit a report later this year.

The 10E Technology Committee is also undertaking a study group on UHD TV fractional higher frame rates (nominal 120 frames/sec). There are two main areas where the study group needs to gather

information. A Request for Information (RFI) has been issued to seek input on approaches to standards conversion and other areas that could impact the technological practicality of operating in an integer-only UHD TV environment in a world where existing HDTV transmissions use fractional frame rates, and a great deal of legacy material has been created at fractional frame rates. A second RFI will be issued shortly, seeking input on operational issues that may arise if operating in an integer-only UHD TV environment.

The 32NF Technology Committee on Network and Facilities Architecture has recently published the first two single-link standards in a suite of electrical SDI interfaces with nominal link rates of 6 Gbits/sec (ST 2081) and 12 Gbits/sec (ST 2082). The suite of interfaces will include single-link, dual-link, and quad link and will be able to transport all UHD TV1 and UHD TV2 image formats up to 7680 x 4320/60/P, 4:2:2, 10 bits or 7680 x 4320/30/P, 4:4:4, 12 bits. The proposed interface can easily be scaled, using additional links, 24 Gbit/sec links, or both, to transport all UHD TV2 image formats currently being proposed. SMPTE’s existing SDI optical interface standard SMPTE ST 297 was updated in 2014 to include 3 Gbits/sec, 6 Gbits/sec and 12 Gbits/sec.

The 32NF Technology Committee has also recently created a new standard for optical interface for UHD TV (ST 2036-4), which is in the final stage of approval and will be published shortly.

Altera Corporation in San Jose, CA, hosted the March Standards Block meetings during the first week of March. The meeting outcome report will be posted on the SMPTE website in order to report publicly on SMPTE standards activities. You can download the most recent meeting outcome report here (<https://www.smpte.org/standards/engineering-committees>).

Upcoming Standards Meetings

7-10 July 2015 Randwick College • Sydney, New South Wales, Australia

16-20 September 2015 Paris, France (Immediately following IBC)

7-11 December 2015 Turner Entertainment • Atlanta, Georgia, USA