

EXCLUSIVE ARTICLES ONLINE: ABSTRACTS

For expanded coverage of this month's topic on "UHD/HDR/WCG," you can find the following papers in the Digital Edition of this issue. Visit the SMPTE digital library at <http://journal.smpte.org> to access the issue and to read these additional papers.

Characterization of Processing Artifacts in High Dynamic Range, Wide Color Gamut Video


By O. Baumann, A. Okell, and J. Ström

With higher resolution, wider color gamut and extended dynamic range, the new ultrahigh-definition (UHD) TV standards promise a more immersive television experience. Although very little content exploiting the full range of the technology is currently available, artifacts associated with the compression of high dynamic range content have already been identified and reported by engineers working in this area. They note that the chroma subsampling process has been shown to cause disturbing artifacts for regions of the image possessing a certain color and luminance. This paper quantifies the distortion and identifies regions of the extended color volume where artifacts associated with standard image processing techniques are more likely to occur. In doing so, it argues that these problems will become greater as more content

exploiting the full potential of UHD becomes available, requiring additional care and processing in content production and delivery. This paper suggests ways of addressing these issues.

A Newly Developed 8K/HLG Broadcasting Camera System With Three CMOS Image Sensors

By Tsuyoshi Sakiyama, Takayuki Yamashita, Toshihiro Hanatani, and Seiji Mitsuhashi

To date, we have developed various types of 8K cameras while considering the tradeoff between the cost and performance at each period of development. In preparation for both the 4K/8K broadcasting starting in 2018 and the 2020 Olympic Games in Tokyo, Japan, we have reconsidered the parameters that should be seen as the most important ones for 8K broadcast cameras. We have also reviewed the appropriate elemental technologies for these cameras. In light of the technological advancements that have been made, we decided to develop a three-chip 8K camera with 5/4-in. image sensors. The camera supports both high dynamic range and high frame rates; we reduced its size to that of a high definition television camera. Both its signal-to-noise ratio and sensitivity achieved the best performances of all 8K cameras. This paper discusses both the parameters and the elemental technologies of all of the 8K broadcast cameras that we have examined. 

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