Integral Three-Dimensional Television Using a 33-Megapixel Imaging System

Journal of Display Technology, vol.6, no10, 2010, p.422-430
Jun Arai, Fumio Okano, Masahiro Kawakita, Makoto Okui, Yasuyuki Haino*, Makoto Yoshimura*, Masato Furuya*, and Masahito Sato*
* JVC KENWOOD Holdings, Inc.

We have developed an integral three-dimensional (3-D) television using an ultra high definition imaging system. The imaging system uses a device having 7,680 pixels in the horizontal direction and 4,320 pixels in the vertical direction, for each of the red, green, and blue channels. A lens array is configured of 400 lenses in the horizontal direction and 250 lenses in the vertical direction. The system is designed to ensure a maximum spatial frequency of 11.3 cycles/degree and a viewing angle of 24 degrees, when the display is observed from 3 times the display height. The setup described here has kept the balance of the maximum spatial frequency and the viewing angle simultaneously by shortening the focal length of the elemental lens with narrowing the pitch of the elemental lens. We have confirmed the generation of a 3-D image with an appearance that varies in a natural manner according to the position of the observer.

Design of Primaries for a Wide-Gamut Television Colorimetry

IEEE Transactions on Broadcasting, vol.56, no.4, 2010, p.452-457
Kenichiro Masaoka, Yukihiro Nishida, Masayuki Sugawara, and Eisuke Nakasu

We discuss the requirements of system colorimetry for a wide-gamut television system and propose a set of wavelengths as monochromatic RGB primaries. We show that a display with three monochromatic primaries (R: 635 nm,G: 532 nm, B: 467 nm) generated by feasible laser devices can cover the gamuts defined by ITU-R Rec. 709, SMPTE RP 431-2, and Adobe RGB. We also prove that most real object colors in Pointer's gamut and the SOCS database are covered with the proposed primaries.