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Subjective Evaluation of Decreasing Primary Color Saturation of UHD-TV Displays for UHD gamut

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BT.2020's color gamut includes 99.9% of that of Pointer colors, which is colorimetric data representing the gamut of real surface colors. For this reason, BT.2020 compliant Ultra High Definition (UHD) displays are required to have a wider color gamut than High Definition (HD) displays. Light-emitting devices and color filters are being developed for UHD displays. Due to issues with light-emitting elements and color filters, UHD displays do not meet the color gamut defined by the standard. UHD displays have the problem of different color gamuts for each display.

In the medical fields, color reproduction, which reproduces the same colors on displays as those seen by humans, is important. UHD displays has been considering for using in the medical fields. Different color gamut between displays are considering to affect color reproduction.

In this study, the perception of color change was evaluated when the saturation of one of primary colors was decreased in the display. Evaluation images were created from standard images while keep the hue and color temperature unchanged. The standard images and the images with changed saturation primary colors were displayed to the 21 subjects. The subjects evaluated the difference in color perception between one of standard images and one of images with different saturation. The results of the evaluation showed that the perception of the difference in saturation was greater when the standard image containing more red and green saturated colors were displayed.

Topics

Session C. Applied optics and engineering

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