

## Reduction Condition of Flicker during Switching of Two-colors for Protection of Image Displayed on a Liquid Crystal Display

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Human eyes can perceive two different colors as a single blended color when they are switched at a high speed. If this characteristic is used to display an image on a Liquid Crystal Display (LCD), the color of the image perceived will differ from the color that is captured on the LCD screen. Thus, this display method can be expected to deter illegal copying of images. However, the flicker occurs only when two colors with different levels of brightness are switched. We have already studied whether flicker was felt under the conditions of different switching speeds and using combination of two grayscale images. The experiment established that the flicker can be reduced at a switching speed of 144 Hz and combinations with gradation values of 0-127 and 191-255. However, the condition for reducing the flicker when using grayscales of gradation values 127-191 was not clear. In addition, conditions for reducing the flicker when using other colors have not been clarified. Therefore, to clarify the condition for reducing the flicker, we examined if flicker was felt with the combination of two grayscale images, gradation values of which were split in increments of eight from 127 to 191. Furthermore, we evaluated whether flicker was perceived or not under the conditions obtained from the grayscale experimental results when the same system colors were switched. As a result, we identified the conditions that make it possible to reduce the flicker that occurs when switching the same system color.

**Keywords** : Successive additive color mixing, Visual characteristic, Liquid crystal display