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Abstract
Liquid crystal displays have a lot of excellences, such as thin thickness, slight weight and high brightness, etc. It is so important subject that developing the high brightness uniformity, low power consumption and thin backlight module. In backlight module light guide plate (LGP) is a key-component of lower cost and easier self-development. Therefore, we emphasize simulation and design for V-CUT LGP in this thesis.

Much simulation software can solve problems of reality due to the development of computer science. For example, optical software designs and analyses backlight module. If we can learn to design the LGP by optical software, we can economize unnecessary try-and-error times and save the waste of cost.

In this thesis, we design the shape of V-CUT streaks by ASAP optical module simulation software. In order to increase the amount of total internal reflection of incident light, we design the distance plates in the between of V-CUTs. To use as a way of fixing the height and the width of V-CUT, in the cause of incident light disseminating the scope of V-CUT, we adjust the width of the distance plate. We simulate the luminance distribution of each distance plate on the top plate of LGP. We select the using width of the distance plates. We separate the bottom plate of LGP into ten parts. Using the luminance distribution to adjust the width of each distance plate, we can get the comparatively uniform luminance distribution. We apply this procedure to V-CUT LGP of 15 inches side type backlight module. The result shows that over 80% practical uniformity is achieved.
Keywords: liquid crystal display, backlight module, light guide plate, optical module, luminance distribution
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