

# AM MiniLED Local Dimming Backlight Achieving high Dynamic Contrast for 8K Displays

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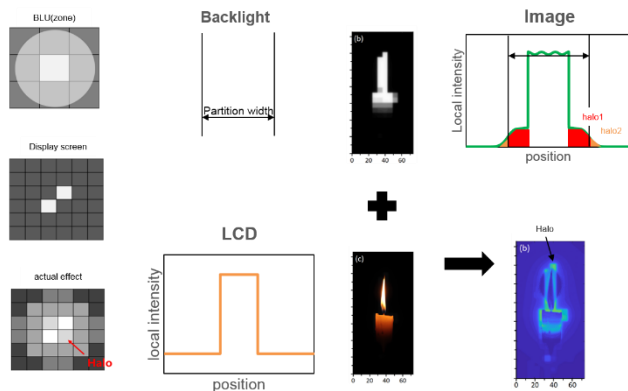
## Abstract

High Dynamic Contrast as an very important element of high-end TV market for display, has received extensive attention in the past years. Here, we proposed an AM MiniLED local dimming backlight technology for 75-inch LCD 8K displays, witch consist of 5184 local dimming zones and can realize area dimming. Compared with the traditional LCD dsplays with a contrast ratio of about 5000 : 1, the 75-inch 8K AM MiniLED LCD displays can achieve a high dynamic constrast ratio of 1,000,000 : 1 and over 1000nits brightness. This AM MiniLED backlight technology can individually control the switch of each zone, which can achieve HDR performance and comparable performance with the other technolysys (Dual-cells and OLEDs). By turning off the dark area directly, the dark state can achieve true black. In addition, the AM MiniLED local dimming Backlight technology clearly indicated that the the low energy consumption, low cost and long life time..

## Author Keywords

High dynamic contrast; MiniLED; 8K.

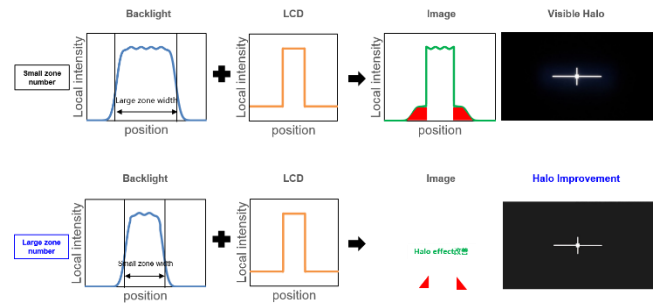
## 1. Experiments and Results



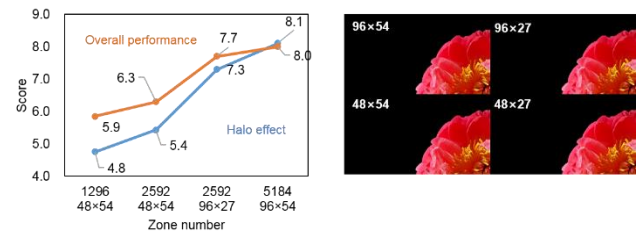
**Figure 1.** The halo effect is mainly caused by the difference between the zone number of BLU and the resolution of the LCD panel.

Halo1 (The partition size is larger than the display size) : It comes from the area where the backlight is turned on, the Pixel has bright & dark pictures, and the dark picture becomes brighter because the backlight is turned on at this time;

Halo2 (Light leakage from bright partition to dark partition) : It comes from the contribution between the adjacent areas of the backlight, the dark picture is brighter due to the backlight.



**Figure 2.** Study the effect of large and small local dimming zone number to Halo. The larger the zone number, the smaller the zone size. The halo effect can be dramatically reduced.



**Figure 2.** Human experiment proves that the actual effect of the high division is excellent.

Goal: To compare the effect of LD zone number on display quality;

Methods: 1. A few video clips were displays on a MLED with each video being divided into 4 parts which correspond to 4 LD zone numbers (shown on the Left) ;

2. 30 people (20-40 years old, male and female) were invited to rate the quality of the video displayed with different LD zone numbers;

3. dimensions (halo effect, contrast, clarity and overall performance) were rated by the participants.

Results: 1. The display quality for the MLED with 5184 zones is the best and that for the one with 1296 zones is the worst. The display quality is improved with the zone number;

2. The zone number has the greatest impact on the halo effect.

## 2. Conclusion

Based on the experiment on display with different zone number (1296 to 5184), the one with 5184 zone shows the best display quality, especially in halo effect.

### 3. Acknowledgements

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Y., and Yeo, S. D., "Technological Progress and Commercialization of OLED TV." SID Symposium Digest of Technical Paper, 44(1), pp. 239-242 (2013).

### 4. References

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