

Factors affecting Contrast Ratio & Cell VT Curve of small size TFT LCD

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The Paper is mainly about experiments on factors affecting Contrast Ratio & Cell V-T Curve of small size TFT LCD

On the 5th Generation TFT-LCD Product Line, we have done 10 groups(or splits) of experiments with high Contrast Ratio Color Filter(S1~S9 in Fig.1) and normal Color Filter(S10 in Fig.1). There are mainly two Cell aspects considered in our experiments: materials and process. In terms of materials, the results show that high CR Color Filter could effectively increase panel CR by 16% than normal Color Filter. In addition, different kinds of Polyimide (S8 & S9) and rubbing cloth (S4 & S5) could also influence CR directly. In terms of Process, rubbing depth (S3 & S5) is one of important factors for changing CR. However, there is not obvious variation of CR when some process parameters like roller speed or table speed of rubbing change.

At the same time, the experimental results show that Cell materials or process parameters would also affect Cell V-T Curve. As to materials, different kinds of Polyimide (S5 & S8) or Liquid Crystal (S4 & S7) would change Cell V-T Curve with 0.1V shift as shown in Fig2. And Cell V-T Curve shift a little when process parameters like roller speed, table speed or rubbing depth change, the same results of CR experiments as before. Considering fluctuation range of Cell process, changing process parameter would not make the precise influence on Cell VT Curves as shown in Fig.2.

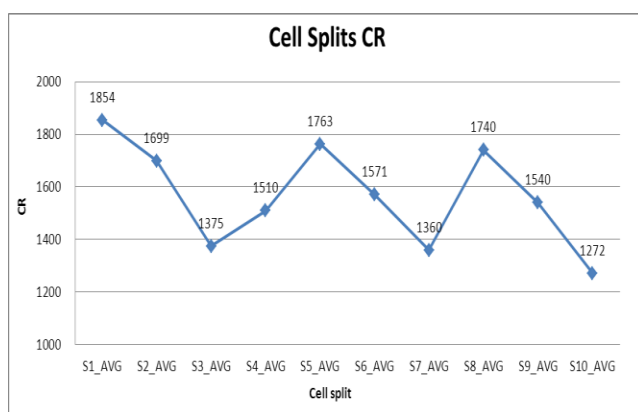


Fig. 1 Contrast Ratio (CR)

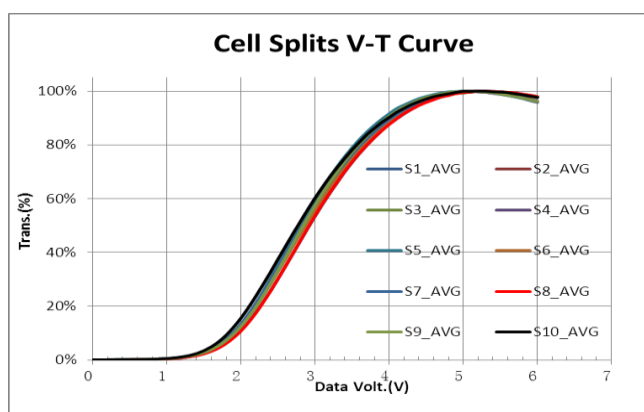


Fig.2 Cell VT Curve

In conclusion, It is a significant experiments for both Cell VT Curve and Contrast Ratio by changing Polyimid type; meanwhile process parameter like rubbing depth has an effect upon Contrast Ratio, but it seems that the process parameters have no impact on Cell VT Curve obviously.

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