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C|D|T

Latest Information

Introducing a major new development in driver technology…

Until now, there have been two ways to drive an OLED display: passive matrix (PM), and active matrix (AM). PM displays are simpler and lower cost, but are limited to small sizes as the power consumption becomes dominated by resistive and capacitive losses at higher resolutions and/or larger panel sizes. On the other hand, AM, based on thin film transistor driving technology, is scalable with respect to both resolution and panel size, but is more complex and very capital intensive, and is therefore out of reach for many manufacturers including those in developing economies with no LCD manufacturing capacity.

Now there is a third driving solution:

Total Matrix Addressing (TMA™)

- ✓ TMA is a new driving technology for PM displays, which has the potential to reduce power consumption and to extend panel lifetime for a given pixel count (resolution or information content).
- ✓ TMA extends PM display resolution into the hitherto AM-dominated display space, whilst being competitive on power consumption.
- ✓ TMA should significantly increase the range of panel sizes which can be addressed using PM driver schemes.
- ✓ TMA is applicable to polymer and small molecule OLED technologies, and both fluorescent and phosphorescent materials.

How does total matrix addressing work?

Total Matrix Addressing reduces the effective multiplex rate by driving lines with common information components simultaneously. It allows the driving of multiple rows and columns simultaneously, substantially reducing the peak luminance requirements.

Implementation of TMA has been made possible by the development of new driver and high speed image processing technologies. A high speed image processing algorithm was required to make TMA cost effective and to enable implementation with full speed video.

Measurements on small passive matrix displays show at least a fifty percent reduction in power consumption, or double the display luminance at the same power consumption. Simulation shows that the benefit improves significantly for higher resolutions, and suggests that power consumption will be competitive with a substantial range of AM-OLED displays.

The high speed algorithm has been demonstrated running full 25 frames-per-second video in programmable silicon. This has allowed CDT to evaluate the feasibility of implementing this technology in various types of OLED product. While development continues, CDT is presently considering how to bring this technology to market in the shortest possible time. If this technology can be implemented successfully in PM display driver chips, it will provide a major boost to the PM OLED industry.

tma™

To hear more about this important development in driving schemes, contact CDT at: info@cdtltd.co.uk.

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