MicroDisplay Corporation recently announced at the 2007 Consumer Electronics Show (CES), which was held a few weeks ago, that industry stalwarts AKAI and Memorex have signed on as customers of MicroDisplay's HDTVs. These new televisions will be powered by MicroDisplay's unique and proprietary 1080p LCOS digital projection imaging technology. Both AKAI and Memorex will start shipping their branded sets in the Summer of 2007 at prices expected to be in the $1,500 range.

According to the company's recent press release, MicroDisplay is partnering with these established brands to develop and distribute rear-projection HDTVs with screen sizes of 52-inches to 62-inches. The sets will be customized with various options for each brand. MicroDisplay also announced "Liquid Fidelity" as the name of its single-chip LCoS technology. This technology produces a smooth, natural picture with a fine texture, accurate colors and a fast response time for a film-like home theater experience. Liquid Fidelity, however, is also less expensive to manufacture and align because it eliminates two of the three chips required by other LCoS technologies (such as SXRD and HD-ILA) and the additional optical components that support them. MicroDisplay Corporation is the first company to mass-produce LCoS devices with the fast response times necessary for use in a single-chip design.

What is Liquid Fidelity?
Liquid Fidelity is a single-chip LCoS technology that produces a true 1080p high-definition TV image. As noted above, it provides a smooth, natural picture with accurate colors and a fast response time for a film-like home theater experience.

How is Liquid Fidelity different from other LCOS technologies?
LCoS, which stands for "Liquid Crystal on Silicon", is a general term for a mix of optical and electrical technologies on one chip. The top layer is a liquid crystal material, the bottom layer is an integrated circuit that drives the liquid crystal, and the surface between the layers is highly reflective. The circuit determines how much light passes through the liquid crystal layer, and the reflected light creates an image on a projection screen.

LCoS chips with both 720p and 1080p resolution have been developed for HDTVs. Until now, all LCoS chips in mass production have been used in three-chip systems, with one LCoS chip each for red, green and blue light. Sony's SXRD and JVC's HD-ILA TVs create images this way. While three-chip systems can produce very good HDTV pictures, they are difficult to align precisely and are expensive. Misalignments can cause visible convergence errors between red, green and blue, particularly along the sides and in the corners of the screen.

Liquid Fidelity addresses both the alignment and cost problems. Exclusive technology enables Liquid Fidelity to change its brightness much more quickly than ordinary LCoS chips can. This fast response allows the use of one chip and a color wheel, rather than three chips, so red, green and blue alignment is assured at all areas on the screen. Also, by eliminating two of the three LCoS chips and the additional optical components to support them, Liquid Fidelity HDTVs are less expensive to manufacture. The resulting picture is bright and clear, with a fine texture and true colors.

**Overview of device employed**

The FHD-8 device is a high-resolution Liquid Crystal on Silicon (LCoS) microdisplay optimized for high performance single-panel and dual-panel projection applications. The FHD-8 offers a high contrast ratio, high fill ratio, and a very fast frame refresh rate. This display has been designed for optical engine architectures that require very high refresh rates and 24-bit color. Both field sequential and scrolling color management techniques are supported.

![Block Diagram of FHD-8 Single-panel MicroDisplay Driver Board](image)
Typical Applications

- Rear Projection Televisions

Interface

- Fully digital LVDS DDR display interface
- Parallel 32-pixel raster-order inputs
- Integrated digital-to-analog converters (no voltage offset matching required)
- Massively parallel sampled-ramp digital-to-analog conversion
- Integrated LVDS clock, data, ramp and command receivers
- Flexible image timing supports custom drive schemes
- Line- and array-wide pixel reset (FlashClear™)
- Random vertical addressing
- Supports many color management schemes including simple and super scrolling color
- Integrated temperature sensor

How is Liquid Fidelity different from DLP?

DLP uses MEMS technology, which stands for Micro-Electro-Mechanical Systems. DLP HDTV chips include hundreds of thousands of microscopic mirrors that tilt back and forth. While a Liquid Fidelity chip creates an HDTV image by controlling the amount of light reflecting from it, a DLP chip creates an HDTV image by varying the percentage of the time that its mirrors aim light toward the projection screen.

An advantage of Liquid Fidelity is that the 1080p Liquid Fidelity chip has over 2 million cells, in an array of 1920 x 1080, for true 1080p pixel resolution. The 1080p DLP chips designed for consumer...
HDTVs have only half that number of microscopic mirrors, and use yet another mechanism to create two pixels from each of these mirrors.

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Diagonal</th>
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| 1920 x 1080 Full
| 0.81 inch (20.5 mm) |
| PAL/SECAM HNC    | 0.82 inch (20.8 mm) |

By providing a dedicated cell for every pixel, Liquid Fidelity technology provides a sharper, more stable picture with a smoother, finer texture.

**Other technologies employed**

**Other technologies employed by MicroDisplay Corp.**

Technology suppliers Gennum and Avtrex add enhancements to MicroDisplay's HDTV performance and feature offerings. Gennum is supplying MicroDisplay with their VPX processor, which provides advanced scaling, motion-adaptive de-interlacing, noise reduction, and edge-enhancement capabilities for greater sharpness and picture detail.

Avtrex is supplying an advanced user interface system for menus, navigation and on-screen displays. The Avtrex system assures ease of operation as well as the flexibility to customize the look and feel for each individual brand. "Our mission is to offer high quality HDTVs at value price points," said Marty Zanfino, VP of Marketing for MicroDisplay Corporation. "The combination of our Liquid Fidelity display technology, the Gennum VPX processor and the Avtrex user interface system does just that. We are please to be launching this technology with Akai and with Memorex, two brand partners with successful histories of bringing new technologies to market."

**Conclusions**

"MicroDisplay's development of Liquid Fidelity single-chip LCoS technology and high-quality HDTVs customized to our needs enables us to provide larger, higher-performance AKAI-branded HDTVs to our customers at more affordable price points," said Keith R. Pillow, director of corporate communications for APH USA, Inc., a subsidiary of ESI Enterprises, and the exclusive sales, marketing, and distribution arm for AKAI-branded audio, video, and portable consumer electronics products in the United States. "We are confident in the quality and performance of MicroDisplay's technologies, and we look forward to the launch of Liquid Fidelity-enabled sets at retail this summer."

"Liquid Fidelity technology sets a new cost/performance standard," says Barry Smith, Chairman and CEO for Memorex. "We are pleased to have the opportunity to deliver such cutting-edge and affordable technology to our customers."

The AKAI and Memorex-branded HDTVs will start shipping in Summer 2007.

**About MicroDisplay**

**MicroDisplay Corporation**, a Silicon Valley start-up, designs, develops, and manufactures state-of-the-art high-definition digital televisions (HDTVs) based on its proprietary "Liquid Fidelity" single-panel Liquid Crystal on Silicon (LCOS) projection technology. MicroDisplay Corporation's HDTVs provide true two-million-pixel resolution with the precise convergence only achievable from a single-panel imaging device. For more information, please contact [http://www.microdisplay.com](http://www.microdisplay.com)