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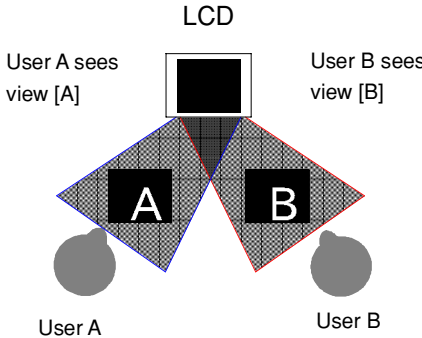
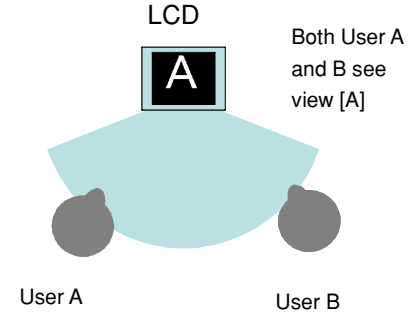
## **Sharp to Mass Produce World's First<sup>\*1</sup> LCD to Simultaneously Display Different Information in Right and Left Viewing Directions**

### **Dual-Functioning Single Unit Offers New Added Value**

Sharp Corporation and Sharp Laboratories of Europe, Ltd. have developed a new LCD, which can simultaneously display different information and image content in right and left views in a single unit by directionally controlling the viewing angle of the LCD. This feature makes it possible to provide information and content tailored to specific users depending on the angle at which they view the screen. Volume production of the LCD will begin in July 2005, marking the introduction of the world's first practical application of this technology.

Increasingly wider viewing angles in LCDs have made possible clear, highly readable displays without loss of image quality no matter what direction the display is viewed from, and mean that several users can view an LCD simultaneously. This has drastically boosted demand for LCD application products such as LCD TVs and monitors, notebook PCs, mobile phones, and the like. Meanwhile, as the settings in which such devices and equipment are used continue to diversify, and the information and visual content displayed on them continue to expand, there is a rapidly increasing need among a broad range of users for a single device capable of restricting the display to only the information or content users need to see.

Using a number of proprietary technologies, such as a parallax barrier superimposed on an ordinary TFT LCD, the LCD sends the light from the backlight into right and left directions, making it possible to show different information and visual content on the same screen at the same time depending on the viewing angle. Controlling the viewing angle in this way allows the information or visual content to be tailored to multiple users viewing the same screen. For example, one user can view the display as a PC screen for browsing the Internet or for editing video shot using a digital camera (IT) while at the same time another user watches video content such as a movie or a TV broadcast (A/V). This ability to enjoy two functions in a single unit in full-screen size will contribute to achieving a full-fledged convergence of digital home electronics A/V and IT.

Name	Controlled viewing-angle LCD (Two-way viewing-angle LCD)
Features	<ul style="list-style-type: none"> <li>• Enables simultaneous display of different information and visual content depending on whether viewed from the right or left direction. A clear, readable display is possible with no intermixing of the respective display content (Figure 1).</li> <li>• The LCD can function as a normal display by displaying the same content on the [A] and [B] screen views (Figure 2).</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>(Figure 1)</p> </div> <div style="text-align: center;">  <p>(Figure 2)</p> </div> </div>
Theory of operation	Superimposing a parallax barrier on a TFT LCD to cause the light from the backlight to separate into right and left directions makes possible a display in which the view differs depending on the angle at which the screen is viewed.

Envisioned application scenarios	<ul style="list-style-type: none"><li>• “LCD multimedia monitor”—Display a TV broadcast on the right screen, while displaying an Internet browser screen on the left screen.</li><li>• “In-vehicle display”—Driver’s side shows a map display, while the passenger side shows a movie on DVD.</li><li>• “Professional monitor”—Display sales offer information to clients on one side while revealing internal data to sales personnel on the other.</li><li>• “Advertisement monitor” —A passerby who comes from right direction can see advertisement [A], and a passerby who comes from left direction can see advertisement [B]. The LCD enables the simultaneous display of two different advertisements and makes more effective use of LCD placements.</li></ul>
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<sup>\*1</sup> As of July 14, 2005; based on Sharp research.