SEMI D59-0710
3D DISPLAY TERMINOLOGY

This Standard was technically approved by the Flat Panel Display – Metrology Global Technical Committee.
This edition was approved for publication by the global Audits and Reviews Subcommittee on April 30, 2010.
Available at www.semiviews.org and www.semi.org in July 2010.

1 Purpose

1.1 This Standard is written to provide better communication between parties in the supply chain, as well as between resale and consumers.

2 Scope

2.1 This Standard starts with the basic and most necessary terms which are used in 3D display (especially for those different from 2D displays). Establishment of other related terminologies will follow.

NOTICE: SEMI Standards and Safety Guidelines do not purport to address all safety issues associated with their use. It is the responsibility of the users of the Documents to establish appropriate safety and health practices, and determine the applicability of regulatory or other limitations prior to use.

3 Referenced Standards and Documents

3.1 None.

NOTICE: Unless otherwise indicated, all documents cited shall be the latest published versions.

4 Abbreviations and Acronyms

4.1 *2D* — two dimensional

4.2 *3D* — three dimensional

4.3 *DEP* — designated eye position

4.4 *IPD* — interpupillary distance

4.5 *LMD* — light measurement device

5 Definitions

5.1 *3D display* — in general, the terminology '3D display' means a specific kind of display, which utilizes optical means to direct different images with parallax to the left and right eyes of a viewer. The viewer fuses these images in his/her brain to perceive stereopsis. For example, stereoscopic 3D displays or autostereoscopic 3D displays.

5.2 *stereoscopic 3D display* — a kind of 3D display that uses a pair of 2D images as their image sources for the viewer's eyes. Optical means or electronic means on the display are used to separate the images. The viewer wearing specific 3D glasses is able to watch stereoscopic images with depth perception.

5.2.1 *stereoscopic display with passive glasses* — a kind of 3d display for which the viewer should wear a pair of passive glasses when watching. The passive glasses include linear polarization glasses, circular polarization glasses and color filter glasses, etc. The stereoscopic display with polarization glasses contains patterned retarder type, as shown in Figure 1, stacked dual panel technology with passive glasses, as shown in Figure 2, etc. The stereoscopic display with color filter glasses contains anaglyph type, narrow-band color filter type, etc.

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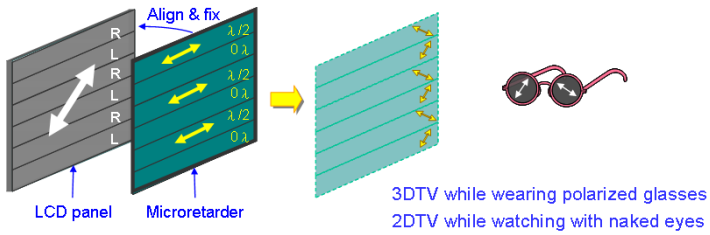

Figure 1
Patterned Retarder Stereoscopic Display with Polarization Glasses

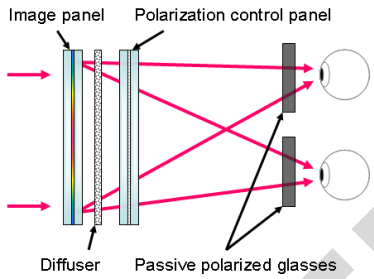

Figure 2
Stacked Dual Panel Technology with Passive Glasses

5.2.2 *stereoscopic display with active glasses* — a kind of 3d display for which the viewer should wear a pair of active glasses when watching. Active glasses include liquid crystal (LC) shutter glasses. The shutter glasses can alternately open and close their left/right LC lens synchronized with the display to show the corresponding images received by the viewer's eyes, as shown in Figure 3.

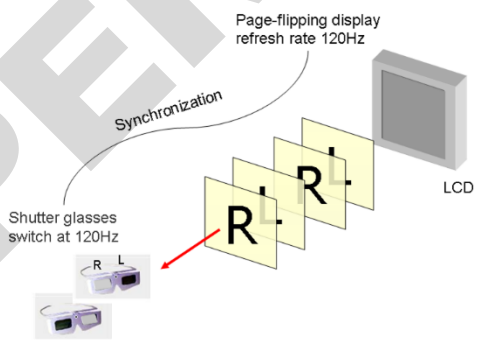

Figure 3
Page-Flipping Stereoscopic Display with Shutter Glasses

5.3 *autostereoscopic display* — a kind of 3D display that uses a pair or multiple sets of 2D images as the image sources for the viewer's eyes. On the display, optical means or opto-electronic means are used to separate the images. The viewer doesn't need to wear special 3D glasses; however, the viewer needs to stay at a specifically designated location to watch stereoscopic images with depth perception.

5.3.1 *2-view autostereoscopic display* — a display with two viewing zones. The viewing zone forming optics of such a display includes parallax barriers, lenticular lens arrays or directional backlight, as shown in Figure 4. The viewer should stay at designated eye positions to watch this kind of display. The viewing distance is specified and the lateral position is limited.

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