

AbstractID: 13377 Title: Evaluation of viewing angle performance on the latest high-brightness color LCD monitors with the in-plane switching panel for medical images

**Purpose:** Our purpose was to compare the viewing angle performance on high-brightness color liquid-crystal display (LCD) monitors to that of monochrome LCD monitors.

**Method and Materials:** We used four LCD monitors with an in-plane switching (IPS) panel: two high-brightness color LCD monitors (RX211, 300 cd/m<sup>2</sup>, two-megapixel, Eizo, and RX210, 240 cd/m<sup>2</sup>, two-megapixel, Eizo), and two monochrome LCD monitors, (GS220, 500 cd/m<sup>2</sup>, two-megapixel, Eizo, and G31-S, 450 cd/m<sup>2</sup>, three-megapixel, Eizo). The luminance performance of each LCD monitor was measured as a function of the viewing angle (-60° to +60°) in the horizontal, the vertical, and the diagonal directions by use of a telescopic-type luminance meter without any ambient lighting. The viewing angle performance was evaluated with a relative contrast ratio of 70 % or greater.

**Results:** The range of viewing angle in terms of relative contrast ratio on the 300 cd/m<sup>2</sup> high-brightness color, the 240 cd/m<sup>2</sup> high-brightness color, the 500 cd/m<sup>2</sup> two-megapixel monochrome, and the 450 cd/m<sup>2</sup> three-megapixel monochrome LCD monitors with similar IPS panels were 34° to 74°, 29° to 48°, 55° to 81°, and 39° to 74°, respectively. The relative contrast ratios showed notable variations for different viewing angles in spite of similar types of panels. Our results indicate that the viewing angle performance on the 240 cd/m<sup>2</sup> color LCD monitor tended to provide a slightly inferior angular performance to the two monochrome LCD monitors used in this study. On the other hand, the 300 cd/m<sup>2</sup> color LCD monitor had a comparable viewing angle performance with the 450 cd/m<sup>2</sup> monochrome LCD monitor.

**Conclusion:** The viewing angle performance on the high-brightness color LCD monitors is inferior to that of monochrome LCD monitors. However the 300 cd/m<sup>2</sup> color LCD monitor had comparable viewing angle performance with the 450 cd/m<sup>2</sup> monochrome LCD monitor.