

The use of computers and soft-copy displays in medicine has opened new avenues of clinical care and research via tele-medicine and tele-diagnosis. The type and quality of medical soft-copy display devices can vary dramatically depending on technology, manufacturer, model, ambient lighting conditions, and the age of the device. The focus of this study is to investigate perceptual methods by which the performance of remote display devices can be assessed. A software program was developed for assessing display quality using a perceptual approach. The program was based on a four alternative forced-choice paradigm. Tests were developed using grayscale sinusoidal patterns to be examined under full visual luminance adaptation. The task of the examiner was to identify a quadrant that contained a target pattern among four possible alternative quadrants. A methodical variation in average gray-level and spatial frequency of the target patterns was used to examine the detection thresholds at different luminance and frequency levels. The detection thresholds were used as indicators of display quality. The utility of the developed perceptual test was examined under three different display resolution conditions and three different ambient light levels. Preliminary results show strong trends on detection thresholds as a function of the variables tested suggesting that a computer-based perceptual method will have utility for assessing the performance of remote display devices.