

Comparison of a CR and a DR System

Two systems for acquiring projection images in digital format, a CR system (Agfa Division, Bayer Corporation) and a large-area flat panel DR system (Canon USA, Inc), were compared using test objects. The DR system has an active area of 43 X43 cm with 2,688 x 2,688 pixels. A 35 x 43 cm CR plate with readout of 2048 x 2508 pixels was used for comparison. Parameters assessed included limiting spatial resolution, low contrast detectability, and exposure range. Images of test objects were obtained using the same x-ray source and exposure conditions and were viewed at full resolution on a softcopy display system having a 2K, high brightness monitor. Window and level settings could not be matched exactly; rather presentations were matched subjectively.

Results are that the limiting spatial resolution of the DR system slightly exceeds that of the CR system, perhaps expected given the DR's smaller pixel size (160 micron vs 170 micron). Similarly, the CR system exhibited a larger exposure range than the DR as would be expected from the characteristics of CR, although the DR system did not saturate within a 2^{10} exposure variation. The systems performed similarly for low contrast detectability.

While both systems have advantages and disadvantages, they appear to be highly competitive in the areas of image quality investigated in this study.

This research was supported by a grant from Canon USA, Inc.