

Purpose: The Wisconsin Cassette had been widely used for beam quality measurements of the screen-film radiographic systems. We explore the possibility of modifying this tool to use CR imaging plate instead of film and the application to the state-of-the-art radiographic systems. **Method and Materials:** When using a Wisconsin Cassette to survey the beam quality, one compares the adjacent dots in the testing and reference regions of the exposed film to find the location of equal optical density, and checks the appropriate calibration curve. In this preliminary study, we removed the back cover of the cassette and placed it on a CR imaging plate. The amount of radiation exposure under the interesting region of the cassette was chosen to be about 1 mR. During the kVp and HVL testing, we added additional copper and aluminum to the reference region until the cassette's original calibration curves became usable. The imaging plate was processed by a Fuji FCR 5000 plus CR reader with S value fixed to 200 under Test/Sensitivity menu option. We analyzed the image by comparing the pixel value of dots in the testing and reference regions. **Results:** With the modified Wisconsin Cassette and CR system, kVp tests at 60, 80, 100, and 120 KVp, as well as the HVL tests at 60 and 80 kVp, were performed at four radiographic systems. The results agree with the recent measurements by noninvasive kVp electronic sensor to within 4% for kVp values, and the measurements by ionization chamber to within 8% for HVL values. **Conclusion:** The modified Wisconsin Cassette can be used with CR as a QA testing tool for radiographic systems with high frequency converters. It will allow for more frequent evaluation of beam quality, and the possibility of finding tube problems associated with kVp and HVL degradation sooner.