

AbstractID: 6627 Title: Comparison of CR QC phantoms: The Kodak TQT program versus a general purpose phantom program

Purpose:

Recently, the American Association of Physicists in Medicine (AAPM) issued two Task Group reports (AAPM Reports 74 and 93) covering acceptance testing and QA for CR systems. An important component of CR QA programs is routine testing of system performance by the technologist. Testing should be simple to perform, be easy to evaluate, and probe most facets of system operation. To this end a quality control phantom for routine testing is recommended. CR QA phantoms can be vendor-specific, or general purpose for cross-platform use. We compare our clinical experience with both types of phantom and discuss their relative merits.

Method and Materials:

The optional Kodak Total Quality Tool (TQT), and associated analysis software, is designed for acceptance testing and routine QA of the Kodak DirectView CR system. Our institution has used the TQT for more than two years. The Fluke EZ CR/DR "DIN" test tool (DTT) is a general purpose phantom incorporating a standard test pattern. The DTT, with an in-house analysis package, has been used with our Fuji CR systems for over four years.

Results:

Both phantoms measure parameters recommended by the AAPM reports. A detailed comparison of measurement capabilities including spatial resolution and linearity, exposure linearity and calibration, low contrast resolution, uniformity, and noise and artifact evaluation is presented. The documentation and integrated analysis features of the Kodak QA program led to easy implementation and management. The DTT analysis used standard imaging tools and subjective measures. While the DTT is useful for cross-platform comparisons, the TQT appears to be more sensitive in detecting potential equipment problems.

Conclusion:

Advantages of the TQT program include: tests specific to the reading mechanism, an integrated user interface, and acceptance and understanding by service personnel. The non-proprietary DTT is useful for comparing different systems using a set of standardized measures.