TITLE: Evaluation of Digital Imaging Systems and PACS Networks With A New Digital Imaging Phantom.

PURPOSE: Evolution of Digital Imaging Systems creates a need for new phantoms designed to measure system performance.

METHOD/MATERIALS: This phantom incorporates tests for high and low contrast resolution to assess performance of digital capture station through various image review workstations and filming stations within a digital network.

The Phantom provides image quality tests for computed radiology and other digital x-ray imaging systems. To enable evaluation of a wide range of digital imaging parameters, a modular phantom design was selected. The design enables insertion of test modules inside holders with varied amounts of tissue absorbing material to duplicate large or small body absolution characteristics. The modular design enables flexibility and upgrade ability. This feature will enable development of new modules to meet changing requirements for a rapidly changing technology.

The test modules include spatial resolution tests of two types: point or line spread function; or square resolution patterns that can also be used with Square Wave Resolution Function approaches for evaluation of frequency transfer characteristics; low contrast resolution tests of cylindrical test objects of various diameters and differential depth to offer contrast-detail detectability information.

RESULTS: Examples of the use of the phantom in testing a number of digital image systems will be shown. To facilitate faster and more objective monitoring of these images, automated software will be demonstrated.

CONCLUSIONS: The use of this digital phantom enables comprehensive image evaluation both locally and at remote workstations.