CDRAD Contrast Detail Radiography Phantom

- Optimized for evaluation of digital systems
- Evaluates loss of detail in Film Digitizers, Computed Radiography (CR) systems and display monitors
- Adjusts and optimizes image processing parameters and viewing conditions
- Improves diagnostic accuracy
- Can also be used for conventional radiography systems

The CDRAD Phantom is an excellent tool for evaluating the imaging characteristics of digital radiographic systems, including stimulable phosphor computed radiography systems and teleradiography systems. One of the principle concerns with the use of digital radiography, is the potential reduction in the visibility of detail due to the blurring introduced at various places within the system, such as the film digitizers, display monitors, and the sampling of the image into discrete pixels.

Key Features
- Image evaluation
- To evaluate the phantom image, the observer indicates the location of the second spot in each square. Correct indication proves that a contrast is actually seen
- At the transition from visible to invisible, it is difficult to decide in which corner the second spot is located, and the response equals pure chance
- The line connecting the central spots with the smallest visible diameter and contrast is called the Contrast Detail (CD) Curve
- For comparison of the imaging performance of different systems, phantom images are made under identical conditions and evaluated by the same observer at the same time. The better system will produce an image in which smaller contrasts and details are visible. This results in a shift of the CD curve to the lower left part of the image. (See graph)
- In the detail (vertical) direction, the diameter of the holes increases step-wise and logarithmically from 0.3 to 8.0 mm. The image shows 15 rows of spots with increasing detail

Phantom Description
- The CDRAD Phantom consists of a Plexiglas® tablet with cylindrical holes of exact diameter and depth (tolerances: 0.02 mm)
- The radiographic image of the phantom provides information about the imaging performance of the whole system
- The image shows 225 squares: 15 rows and 15 columns
- In each square, either one or two spots (the images of the holes) are present. The first three rows show only one spot, while the other rows have two identical spots; one in the middle and one in a randomly chosen corner.
- The optical densities of the spots are higher than the uniform background
- In the contrast (horizontal) direction, the depth of the holes increases logarithmically, and the image shows 15 columns of spots with increasing contrast
- Comparison of the performance of several observers is also possible. The better performing observer produces a CD curve more to the lower left part of the image

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