

Quality Control Test Objects

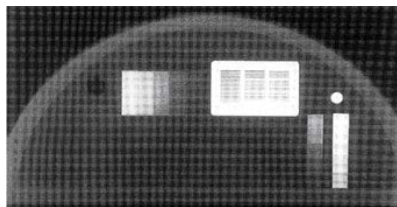
Mammographic Test Objects

These consist of a semi-circular test plate (radius 11cm) used in conjunction with a variable 6cm stack of Perspex plates which provide appropriate amounts of X-ray absorption, scatter and geometrical unsharpness. Three types of test plate are available; TOR [MAS], TOR [MAX], TOR [MAM]. They are intended to be used for routine quality-control, but can also be used to investigate different mammographic techniques or screen-film combinations etc. A comprehensive instruction manual is provided for TOR's [MAX] and [MAS] and a separate instruction manual for TOR [MAM].

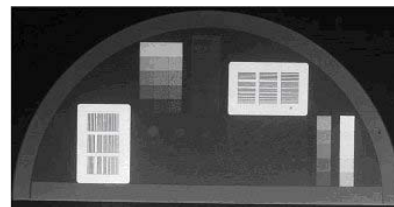
TOR [MAS] and [MAX]

These two test objects are very similar and contain the following:

- Ten-step grey-scale plus two points for Sensitometric measurements: base-plus-fog, speed index, contrast index (to check the consistency of mammographic exposures and processing).
- Resolution test pattern, 1 to 20 lp mm⁻¹ (to measure focal spot/geometrical unsharpness). In TOR [MAX], two patterns are mounted in perpendicular directions.
- Two series of 0.5mm and 0.25mm details, to measure small detail detectability (sensitive to radiographic noise and unsharpness).
- Low-contrast circular details, 6mm diameter (representing tumorous masses).
- Low-contrast linear details, 1.8 to 5 lp mm⁻¹ (representing filamentary structures).
- Irregular-shaped particles on a step-wedge background (median sizes 125, 225, 325 microns representing micro-calcifications).



TOR MAS



TOR MAX

TOR MAM

This test object is supplementary to TOR [MAS] or [MAX] and provides a more "natural" image which may be preferred by radiographers and radiologists. The top (left) half contains a range of filaments, micro-particles and low-contrast details, representing pathological features in the breast. These are sensitive to the mammographic grey-scale, noise and unsharpness, and can be used to obtain an image-quality "score". The lower (right) half simulates the appearance of breast tissue and contains micro-calcification in addition to fibrous and nodular details:

- 6 groups of multi-directional filaments.
- 6 groups of micro-calcifications in ranges of 354-224, 283-180, 226-150, 177-106, 141-90, 106-93.
- 6 groups of 3, low contrast details groups.
- 6 groups of micro-calcifications (as in the above) with a clinically realistic breast tissue feature.

