

Modular DBT™ Phantom

Quality Control for Digital Breast Tomosynthesis Systems

- Evaluate image quality and quantify targets in reconstructed images
- Thoroughly test Tomosynthesis system performance
- Comply with developing protocols and standards, including EUREF¹, IEC² and AAPM Task Group 245

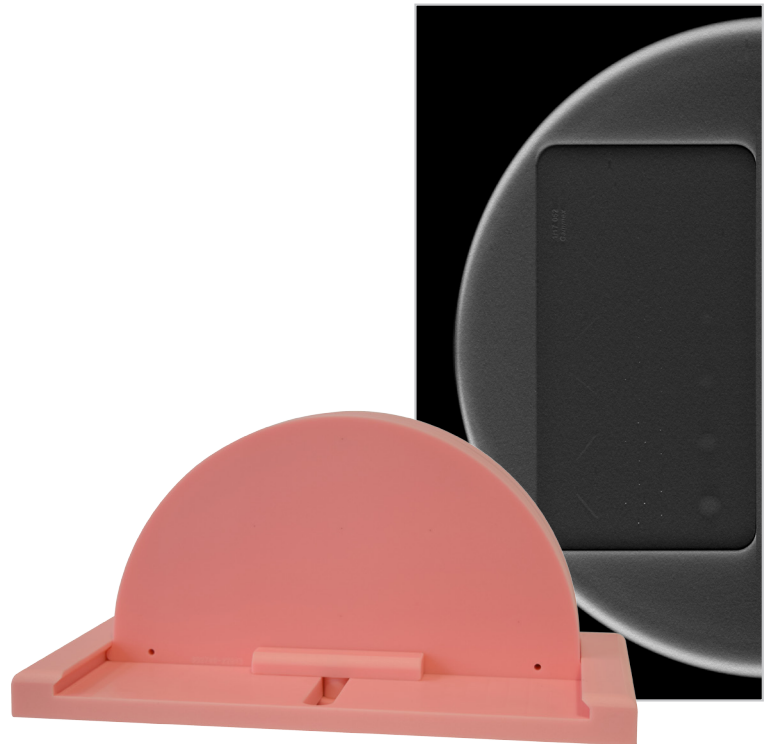


The Modular DBT Phantom by Gammex was developed in collaboration with medical physicists to support quality control for Tomosynthesis and Digital Mammography systems. A range of simple to complex targets are precisely placed within tissue-equivalent breast material that is 50% breast-glandular and 50% breast-adipose.³ This uniquely flexible phantom design includes modules that assess Image Quality to Modulation Transfer Function (MTF) tests.

Save time and simplify Tomosynthesis QC

The phantom is designed for acceptance testing, routine QC and research.

- Automatically align to the chest wall for reproducible tests
- Assess image quality and artifact detection using the DBT Phantom configuration for Image Quality
- Move test objects closer to or further from the detector without tools



The Image Quality configuration provides an overall thickness of 6.5 cm with specks, masses and fibers embedded on the central plane.

¹ EUREF (European Reference Organization for Quality Assured Breast Screening and Diagnostic Services) Protocol version 1.01 for the Quality Control of the Physical and Technical Aspects of Digital Breast Tomosynthesis Systems.

² International Electrotechnical Commission

³ Hammerstein R., Miller D., White D., et al; Absorbed Dose in Mammography; RADIOLOGY;130:485-491.



Adaptable for Image Quality to MTF tests

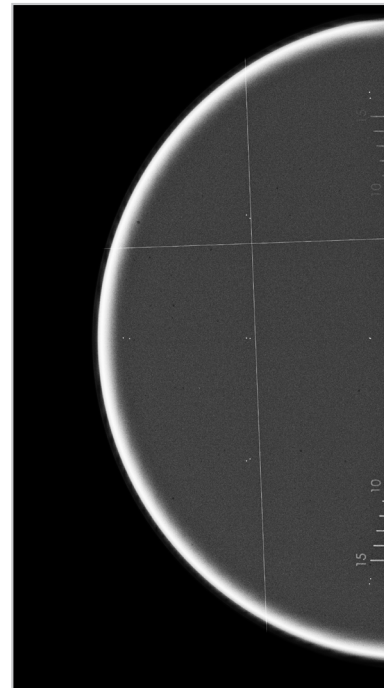
- Image Quality
- Missing Tissue Detection
- 2D and 3D Accuracy
- Line Spread Function (LSF)
- Artifact Detection
- Contrast-to-Noise Ratio (CNR)
- Signal-to-Noise Ratio (SNR)
- Compression
- Modulation Transfer Function (MTF)



Modular DBT Phantom shown with optional breast-glandular and breast-adipose tissue-mimicking materials.

Evaluate the entire imaging chain

- High-attenuating objects to test projection images
- Low contrast objects and simulated breast tissue for reconstructed images



Tomosynthesis reconstructed image shows modules with objects including tungsten BBs and wires, and barium-filled grooves.

The numbered barium-filled grooves help measure missing tissue detection.



Optional breast-glandular and breast-adipose homogeneous modules are available.



Specifications

The Modular DBT Phantom is backed by a 5-year warranty and is available in several configurations. Included are several target modules and blanks, the back plate assembly, a user guide and a custom hard-sided waterproof case.

Module Name	Target Characteristics	Module Thickness (mm)
Image Quality	Specks, masses, fibers. See specifications below.	15
Missing Tissue Detection	Barium-filled grooves, 1 mm x 0.5 mm, sized from 0 mm to 15 mm	10
MTF, LSF	2 tungsten wires, 25 micron DIA	10
CNR	1100 aluminum alloy sheet, 0.1 mm thick, 45° angle	5 (10 total)
Rounded Edge	No targets	20
2D and 3D Accuracy	14 tungsten BBs, 0.279 mm DIA, aligned in X, Y and Z-axis	15
Breast Blank	No targets	5, 10, 20
Breast-Glandular Blank	No targets	10, 20
Breast-Adipose Blank	No targets	10, 20

All modules are epoxy resin-based Hammerstein composition, with dimensions of 180 mm x 100 mm.

Image Quality Module Test Object Specifications

The phantom configuration for Image Quality tests includes the Image Quality and Missing Tissue Detection modules, plus several blank modules. This configuration has an overall thickness of 6.5 cm.

Fiber Diameter (mm)	Speck Diameter, Glass Sphere (mm)	Mass Thickness (mm)
0.89 ± 0.05	0.33 ± 0.0100	1.00 ± 0.05
0.75 ± 0.03	0.28 ± 0.0083	0.75 ± 0.05
0.61 ± 0.03	0.23 ± 0.0069	0.50 ± 0.05
0.54 ± 0.03	0.20 ± 0.0059	0.38 ± 0.04
0.40 ± 0.03	0.17 ± 0.0084	0.25 ± 0.03
0.30 ± 0.03	0.14 ± 0.0070	0.20 ± 0.02



Mammography & Tomosynthesis QA Tools

Choose from kits that include everything you need for routine QA and acceptance testing. Or select from a Tomosynthesis phantom, breast biopsy training phantoms, a breast compression test device and other QA tools.