MAMMOGRAPHY QA SOLUTIONS
The Gold Standard for Breast Screening and Biopsy Training
GOLD STANDARD QA SOLUTION FOR BREAST HEALTH

When the United States mandated Mammography QA requirements via the Mammography Quality Standards Act (MQSA), the American College of Radiation (ACR) worked with Gammex to complete the phantom design known today as the Mammo 156™ Phantom.

Just as the Mammo 156 Phantom established a repeatability and reproducibility standard for the detection of breast cancer, new Gammex solutions are poised to become go-to resources for addressing clinical and research needs. We are pleased to provide these and more innovations to help increase patient safety and improve breast cancer detection effectiveness.

The Modular DBT™ Phantom will thoroughly test Tomosynthesis system performance.

The Mammo FFDM™ Phantom is the new ACR Digital Mammography Phantom.
Modular **DBT™** Phantom

Quality Control for Digital Breast Tomosynthesis Systems

- Evaluate image quality and quantify targets in reconstructed images
- Thoroughly test Tomosynthesis performance
- Comply with developing protocols and standards, including EUREF\(^1\), IEC\(^2\) and AAPM Task Group 245

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

### Specifications

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

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Target Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Image Quality:</strong></td>
<td>Specks, masses, fibers</td>
</tr>
<tr>
<td><strong>Missing Tissue Detection:</strong></td>
<td>Barium-filled grooves, 1 mm x 0.5 mm, sized from 0 mm to 15 mm</td>
</tr>
<tr>
<td><strong>MTF, LSF:</strong></td>
<td>2 tungsten wires, 25 micron DIA</td>
</tr>
<tr>
<td><strong>CNR:</strong></td>
<td>1100 aluminum alloy sheet, 0.1 mm thick, 45° angle</td>
</tr>
<tr>
<td><strong>2D and 3D Accuracy:</strong></td>
<td>14 tungsten BBs, 0.279 mm DIA, aligned in X, Y and Z-axis</td>
</tr>
</tbody>
</table>

Additional modules available. All modules are epoxy resin-based, Hammerstein\(^3\) elemental composition, 180 mm x 100 mm.

\(^1\) 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.
Mammo FFDM™ Phantom

Designed with the ACR to test Digital Mammography system performance

- ACR Digital Mammography Phantom
- Detect microscopic objects that mimic small structures in the breast
- Evaluate artifacts over the entire detector with a single image
- Reduce backscatter and equalize attenuation
- Comply with EUREF, MQSA and ACR

Specifications

The phantom includes a 5-year warranty and permits testing of 3.0 mGy dose limit.

- Nylon Fibers: 6
- Specks: 6 Groups, Glass Spheres
- Masses: 6
- Dimensions (L/W/H): 31.0 ± 0.1 x 19 ± 0.1 x 4.1 ± 0.03 cm
- Dimensions: Wax Insert (L/W/H): 12.98 (+ 0, - 0.04) x 6.98 (+0, -0.04) x 0.7 ± 0.02 cm
- CNR Cavity Depth: 0.1 ± 0.005 cm
- CNR Diameter: ± 0.05 cm
- Compensator: 9 mil Polyvinylidene Chloride

Ensure detection of the smallest structures with regular use of the Mammo FFDM Phantom.

* http://www.acraccreditation.org/Modalities/Mammography
Mammo 156™ Phantom
The required standard for image quality evaluation — ACR and EUREF

- Measure and monitor mammography systems’ signal to noise, resolution and image quality
- Comply with ACR, MQSA (FDA) and EUREF requirements
- Help improve patient outcomes

Specifications
Wax and acrylic equivalent to 4.2 cm thick compressed breast tissue. 50% adipose and 50% glandular. Five-year warranty included.

<table>
<thead>
<tr>
<th>Specifications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylon Fibers</td>
<td>6</td>
</tr>
<tr>
<td>Specks</td>
<td>5 Groups</td>
</tr>
<tr>
<td>Masses</td>
<td>5</td>
</tr>
<tr>
<td>Dimensions (L/W/H)</td>
<td>10.2 x 10.8 x 4.5 cm</td>
</tr>
</tbody>
</table>

Maintain Accreditation
Clinical and technical publications reference the Gammex Mammo 156 Phantom more than any other mammography phantom.

Evaluate Image Quality
The Mammo 156 Phantom must be imaged weekly to maintain accreditation.

Wax insert schematic. Numbers are for reference only. (See ACR specifications at ACR.org.)
Mammo 156 Stereo™ Phantom

When patients require stereotactic biopsy, choose the Mammo 156 Stereo Phantom to maintain system quality and compliance.

- Comprehensive stereotactic biopsy system accreditation
- Comply with MQSA (FDA) and ACR requirements
- Designed to hang on the biopsy system detector during rotation

Specifications
Wax and acrylic equivalent to 4.2 cm thick compressed breast tissue. Design per ACR specifications. Five-year warranty included.

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylon Fibers</td>
<td>4</td>
</tr>
<tr>
<td>Specks</td>
<td>4 Groups</td>
</tr>
<tr>
<td>Masses</td>
<td>4</td>
</tr>
<tr>
<td>Dimensions (L/W/H)</td>
<td>6.7 x 6.8 x 6.1 cm</td>
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</tbody>
</table>

Remain Compliant
The Mammo 156 Stereo is backed by Gammex's thirty-plus years in the industry.

Breast Biopsy // Training Tools

Stereotactic Breast Biopsy Phantom
Sharpen your skills in mammography needle insertion.

Physicians and technologists use this disposable phantom to practice stereotactic breast biopsy procedures.

Ultrasound Breast Biopsy Training Tool
Become proficient in ultrasound-guided biopsy.

The Ultrasound Breast Biopsy Phantom allows you to fine tune your biopsy skills using ultrasound to dynamically locate lesions and practice needle placement.
MAMMOGRAPHY & TOMOSYNTHESIS QA TOOLS
As the leader in Mammography and Breast Health QA, we are here to help.

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.

Breast Compression QC Device
This device measures the compression force to assure accuracy and reproducibility. Appropriate compression of the breast is critical to reducing radiation dose, enhancing image quality and improving visibility of pathologies.

<table>
<thead>
<tr>
<th>Force Range: 3-30 kg (6-66 lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy: ± 0.27 kg</td>
</tr>
<tr>
<td>Contact Area: 8.5 cm diameter</td>
</tr>
<tr>
<td>Size: 11.5 x 9 x 5 cm (4.5 x 3.5 x 2 in)</td>
</tr>
<tr>
<td>Weight: 0.91 kg (2 lbs)</td>
</tr>
</tbody>
</table>

High Purity Aluminum HVL Set
Gammex’s High Purity Aluminum HVL Attenuator Set includes 6 sheets of 99.99% pure aluminum. The set is proven to provide more accurate measures of half value layer in mammography than aluminum alloys.

<table>
<thead>
<tr>
<th>Construction: 99.99% Pure Aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size: 10 x 10 cm (4 x 4 in)</td>
</tr>
<tr>
<td>Weight: 0.09 kg (0.2 lbs)</td>
</tr>
<tr>
<td>Thickness: 0.1 mm</td>
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</tbody>
</table>

Phototimer Consistency Tools
Test Automatic Exposure Control (AEC) performance. Image different thicknesses and measure densities to confirm AEC is optimal. Available in precision acrylic or breast tissue mimicking material.

<table>
<thead>
<tr>
<th>Construction: Choose from 7 pieces of acrylic or 7 pieces of breast tissue-mimicking material.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size &amp; Weight: Dependent on material</td>
</tr>
</tbody>
</table>
Gammex is a leader in mammography QA, and we have the expertise and technical knowledge to support your Quality Assurance programs.

Call us or visit our website for details.
+1 608-828-7000 // sunnuclear.com

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7600 Discovery Drive, Middleton, WI 53562
800-426-6391 (800-GAMMEX-1)

References
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 http://www.acraccreditation.org/Modalities/Mammography
4 ACR Mammography Accreditation Program Testing Instructions (https://accredit.acr.org)
5 ACR Mammography Accreditation Program Testing Instructions (https://accredit.acr.org)

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