# Innovative Solutions for Diagnostic Imaging QA

Sun Nuclear offers a comprehensive suite of CT, Mammography, Ultrasound, and DR/CR/Fluoroscopy QA tools — leveraging proven technologies and backed by world-class support.

Review this catalog for highlights on key solutions available. Visit sunnuclear.com to request a quote, find your distributor, and explore our full portfolio of Quality Management solutions for Diagnostic Imaging and Radiation Therapy.
CT ACR 464 Phantom
Multi-Modality CT Accreditation
PN 804740, Stand (PN 804868) sold separately

Comprehensive CT Testing
- Test positioning and alignment accuracy, CT number accuracy, slice thickness, low contrast detectability, image resolution and uniformity, spatial resolution, and inter- and intra-plane distance measurement accuracy
- Meet AAPM TG-66 requirements

Proven & Versatile Design
- Made of the original Solid Water® Zero HU formulation
- Works with RapidCHECK™ software to automate CT image quality testing
- Optional Phantom Body Ring and Extensions available

Specifications

<table>
<thead>
<tr>
<th>Material</th>
<th>Zero HU Solid Water®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>20.0 cm (7.9 in)</td>
</tr>
<tr>
<td>Length</td>
<td>16.0 cm (6.3 in)</td>
</tr>
<tr>
<td>Weight</td>
<td>5.3 kg (11.7 lbs)</td>
</tr>
</tbody>
</table>

Imbedded Test Objects

| Water Equivalent Linearity Rod          | Solid Water, Zero HU |
| Bone Equivalent Linearity Rod           | Bone tissue equivalent material |
| Acrylic Linearity Rod                   | Cast Acrylic          |
| Polyethylene Linearity Rod              | Low Density Polyethylene |
| Low Contrast Rods                       | 6 x 0.5 HU Contrast rods, in sizes ranging from 2 mm to 6 mm, plus 25 mm |
| Tungsten Carbide Beads                  | 0.28 mm (0.011 in) in diameter grade 25 tungsten carbide beads |
| Line pair Material                      | 6061 Aluminum and Polystyrene |

CT ACR 464 Phantom Body Ring

| Material                  | Zero HU CT Solid Water® |
| Inner Diameter            | 20 cm                  |
| Depth                     | 61 cm                  |
| Outer Diameter            | 33 cm wide, 26.4 cm high |

CT ACR 464 Phantom Extension Kit

| Material                  | Zero HU CT Solid Water® |
| Plate Thickness           | 4.0 cm (1.6 in)         |
| Diameter                  | 20 cm (7.9 in)          |

Soft Case for CT ACR 464 Phantom & Stand
PN 804867

Soft Case for Extension Plate Kit
Fits Extension Stand & 2 End Plates/Advanced iqModules™
PN 805540

Soft Case for CT ACR 464 Phantom & Extension
Fits CT ACR 464 Phantom, Extension Stand & 2 End Plates/Advanced iqModules™ Plate Kit
PN 805541
Advanced iqModules™
Expanded Image Quality CT QA

Unmatched Image Quality Testing
Set of four modules for comprehensive CT image quality testing
- Low-Contrast Detectability Module tests performance across scanners and protocols with three different contrast levels
- Slice Sensitivity & Geometric Evaluation Module validates slice thickness, sensitivity profile and system geometry
- High-Contrast Resolution Module expands CT ACR 464 testing
- Uniformity Module assess CT number uniformity

Modular CT QA Support
Can be combined with CT ACR 464, Advanced Electron Density, or Multi-Energy CT Phantoms

All Advanced iqModule Specifications
- Materials: Epoxy and CT High Equivalency Solid Water® (Uniformity Module comprised solely of HE CT Solid Water)
- Diameter: 20.0 cm (7.9 in)
- Length: 4.0 cm (1.57 in)
- Warranty: 5 years

Low-Contrast Detectability Module Specifications
- Contrast Levels: 0.3 % (3 HU), 0.6 % (6 HU), 1.0 % (10 HU)
- Sizes at Each Contrast Level: 25 mm, and two at each of 1.5, 2, 3, 4, 5, 7, 9, and 12 mm
- Sizes of Sub-slice Objects: 2, 3, 5, 7, and 10 mm (cylinder diameter and length), at each contrast level

High-Contrast Detectability Module Specifications
- Resolution Pattern Size: 1.5 cm x 1.0 cm x 0.4 cm
- Resolutions Tested: 2, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30 and 32 lp/cm
- Automated Analysis Features: Solid material samples improve computational analysis. Large pattern sizes enable robust evaluation.
- Contrast Material: Zinc

Slice Sensitivity & Geometric Evaluation Module Specifications
- Wire Ramps: Tungsten wire, 0.05 mm diameter
- Bead Ramps: One opposed set with 0.18 mm tungsten carbide bill; and one with 0.28 mm tungsten carbide bills
- MTF Bill’s: 0.18 mm and 0.28 mm
- MTF Wire: Tungsten wire, 5 degrees off-vertical, 0.05 mm diameter
- Acrylic Spheres: 1.0, 1.5, 2.0, 3.0, 4.0, 6.0, 8.0, and 10.0 mm diameter

Uniformity Module Specifications
- Tungsten Carbide Beads: 0.28 mm (0.011 in) in diameter grade 25 Tungsten Carbide beads

Modular Base
The Solid Water® HE base is compatible with two sets of rods for multi-energy CT QA as well as TPS calibration. See page 8 for details.
Automated CT-to-Electron Density Analysis
- Patented rod markers* uniquely identify each material in a CT scan
- CT-to-density tables are automatically generated in the RapidCHECK™ software

Sized for Wide-Beam Applications
- Larger phantom body diameter supports evaluation of cone-beam CT and wide-beam CT scanners
- Removable section for head and small body protocols

Superior Tissue Equivalence & Chamber Compatibility
- Meets medical standards ICRU-44 and ICRP for human tissue densities
- Compatible with any ion chamber

Specifications

### Software Analysis
Automatically process CT-to-density tables using RapidCHECK, based on patented rod marker technology

### Inplane Dimensions
40.0 cm (15.7 in) x 30.0 cm (11.8 in)

### Depth
16.5 cm (6.5 in) to 26.5 cm (10.2 in) with optional extension plates

### Removable Head Section Diameter
20.0 cm (7.87 in)

### Material
- HE Energy-Matched CT Solid Water®
- Interchangeable Inserts: 14 solid inserts plus 2 true water containers
- Optional Inserts: Aluminum, Stainless Steel, Titanium

### Available Upon Request
- Extension plates, Ion Chamber conversion rod

### Weight
15.5 kg (34.1 lbs)

### Wheeled Case & Stand
Included

*U.S. Patent No. 10,939,891

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### Standard Inserts

<table>
<thead>
<tr>
<th>Material</th>
<th>Physical Density (g/cm³)</th>
<th>Electron Density Relative to Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>455 Lung LN-300</td>
<td>0.29</td>
<td>0.28</td>
</tr>
<tr>
<td>485 Lung LN-450</td>
<td>0.45</td>
<td>0.44</td>
</tr>
<tr>
<td>1553 HE Gen Adipose</td>
<td>0.94</td>
<td>0.94</td>
</tr>
<tr>
<td>1454 HE Breast 50.50</td>
<td>0.98</td>
<td>0.97</td>
</tr>
<tr>
<td>4 - 1451 HE CT Solid Water® Inserts</td>
<td>1.02</td>
<td>1.00</td>
</tr>
<tr>
<td>1481 HE Brain</td>
<td>1.05</td>
<td>1.02</td>
</tr>
<tr>
<td>1482 HE Liver</td>
<td>1.08</td>
<td>1.05</td>
</tr>
<tr>
<td>1456 HE Inner Bone</td>
<td>1.21</td>
<td>1.16</td>
</tr>
<tr>
<td>484 CB2 + 30% CaCO3</td>
<td>1.33</td>
<td>1.27</td>
</tr>
<tr>
<td>480 CB2 + 50% CaCO3</td>
<td>1.56</td>
<td>1.46</td>
</tr>
<tr>
<td>1450 HE Cortical Bone</td>
<td>1.93</td>
<td>1.78</td>
</tr>
<tr>
<td>2 - True Water Inserts</td>
<td>1.00</td>
<td>1.00</td>
</tr>
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</table>

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### Advanced Electron Density Phantom
Tissue-Equivalent CT-to-Electron Density Calibration in a Single Workflow
PN 805810

### RapidCHECK™ Software
Automated CT-to-Density Calibration & CT Image Quality Analysis
PN 806017

### Mercury 4.0 Phantom
Advanced CT Performance Assessment
PN 805835

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**Automate QA Workflows**
- Use with Advanced Electron Density Phantom for faster, less-tedious calibration of CT-to-electron density tables
- Use with CT ACR 464 Phantom for automation of image quality analyses, trending reports, and an easily searchable permanent record

**Browser-Based Software**
- Use RapidCHECK software from any browser in your clinical network
- Get results immediately – load data, see analysis, print report, and track changes over time

**Characterize Advanced CT Features**
- Address performance and effectiveness of Automatic Exposure Control/Tube Current Modulation
- Evaluate image quality for Iterative Reconstruction
- Meet AAPM TG-233 requirements

**CT Protocol Optimization**
- 9-tiered sections reflect range of patient sizes, and enable size-dependent image quality evaluation
- Software analysis, featuring imQuest software licensed from Duke University

**Specifications**

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<td>1.00</td>
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**Current Device Compatibility**
Advanced Electron Density Phantom, CT ACR 464 Phantom

**Operating System**
Windows 10 Pro with Creators Update (Version 1703) and Fall Creators Update (Version 1709, build 16299), Windows 10 Enterprise, or Windows 10 Educational

**Regional Settings**
US or International

**Contrast Materials**
- HE CT Solid Water®, Bone Mimicking Material, Polyethylene, 10 mg/mL Iodine, and Air

**Resolution Wedge**
HE CT Solid Water®

**Software Analysis**
Works with imQuest software, available from Duke

**Included**
- Wheeled Case and Stand

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*SUN NUCLEAR CORPORATION // sunnuclear.com SUN NUCLEAR CORPORATION // sunnuclear.com*
Consistent, Optimized CT Perfusion Programs
- Ensure CT scanner and perfusion software are providing consistent results
- Benchmark perfusion rates and time-attenuation curves for each system
- Meet ACR CT Perfusion and FDA recommendations

Image Gently
- Use the dose port to optimize imaging and perfusion protocols
- Gain insights to image at the lowest possible dose

Specifications

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<tr>
<th>Covers and housings</th>
<th>PVC, Acrylic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dosimetry Port</td>
<td>Standard CT Pencil Chambers up to 12.7 mm (0.5 in) diameter</td>
</tr>
<tr>
<td>Central Scan Disk</td>
<td>High Equivalency (HE) Brain Mimicking Material</td>
</tr>
<tr>
<td>Artery Rod</td>
<td>16 discrete sections of blood and contrast simulating materials to mimic arterial flow rates following a contrast bolus injection</td>
</tr>
<tr>
<td>Vein Rod</td>
<td>16 discrete sections of blood and contrast simulating materials to mimic venous flow rates following a contrast bolus injection</td>
</tr>
<tr>
<td>Tissue Rods (Qty 2)</td>
<td>HE Brain Mimicking Material of 16 discrete sections of brain tissue to mimic tissue uptake rates following a contrast bolus injection</td>
</tr>
<tr>
<td>Velocity settings (mm/second)</td>
<td>1.31, 1.50, 2.10, 2.63 +/- 2%</td>
</tr>
<tr>
<td>Rod Travel Distance</td>
<td>10.5 cm (4.1 in)</td>
</tr>
<tr>
<td>Dimensions (L/W/H)</td>
<td>50.5 x 25.4 x 30.5 cm (20 x 10 x 12 in)</td>
</tr>
<tr>
<td>Power</td>
<td>8 AA batteries (included)</td>
</tr>
<tr>
<td>Weight</td>
<td>13.6 kg (29.9 lbs)</td>
</tr>
</tbody>
</table>

Compliance Maintenance
- Measure absorbed dose and monitor scanner output for Dose Index QA
- Address specifications outlined by the FDA (FDA 21CFR 1020.33) and IEC (IEC 60601-2-44, IEC 61223-2-6 and IEC 61223-3-50, IEC 60601-2-44)
- Meet AAPM TG-66 requirements

Configurable
- 2-piece configuration supports adult body and adult head/pediatric body sizes
- 3-piece configuration offers an additional pediatric head size
- Nested modules adapt the phantom to the size required by user protocol

Specifications

<table>
<thead>
<tr>
<th>Material</th>
<th>Polymethyl-Methacrylate (PMMA/Acrylic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>1.19 g/cm³</td>
</tr>
<tr>
<td>Alignment Markings</td>
<td>Etched lines centered at the transverse, coronal and sagittal planes</td>
</tr>
<tr>
<td>Module Dimensions</td>
<td>(OD x Length)</td>
</tr>
<tr>
<td>Adult Body</td>
<td>32 cm x 14.5 cm</td>
</tr>
<tr>
<td>Adult Head/Pediatric Body</td>
<td>16 cm x 14.5 cm</td>
</tr>
<tr>
<td>Pediatric Head (Model 466-BHP only)</td>
<td>10 cm x 14.5 cm</td>
</tr>
<tr>
<td>Weight</td>
<td>19.9 kg (35 lbs)</td>
</tr>
<tr>
<td>Chamber Ports Diameter</td>
<td>1.31 cm</td>
</tr>
</tbody>
</table>
Mini-Doppler 1430™ Flow Phantom Specifications

HE Gel™ Multi-Frequency Tissue-Mimicking Material Included
Patented Composite Film Scanning Surface Included

Vessels (2)
- 4 mm inner diameter; 1 horizontal at 2 cm depth, 1 diagonal at 35° from 2 to 9 cm deep

Flow Rates
- Customizable, constant and pulsatile

Blood Mimicking Fluid
- Speed of Sound 1550 +/- 10 m/s

Targets
- Strings, cysts, grey scale, resolution groups

Dimensions (Case)
- 20 H x 23 W x 15.2 cm (7.87 x 9.06 x 5.94 in.)

Weight
- 4.6 kg (9 lbs. 15 oz.)

Doppler 403™ Flow Phantom Specifications

HE Gel™ Multi-Frequency Tissue-Mimicking Material Included
Patented Composite Film Scanning Surface Included

Vessels (2)
- 5 mm inner diameter; 1 horizontal at 2 cm depth, 1 diagonal at 40° from 2 to 16 cm deep

Flow Rates
- Customizable, constant and pulsatile

Blood Mimicking Fluid
- Speed of Sound 1550 +/- 10 m/s

Targets
- Strings, cysts, grey scale, resolution groups

Dimensions (Case)
- 28 H x 30.5 W x 22 cm (11 x 12 x 8.65 in.)

Weight
- 4.6 kg (9 lbs. 15 oz.)

Comprehensive QA & Testing
- Determine maximum signal penetration, channel isolation, and flow rate readout accuracy
- Doppler flow and B-Mode QA test systems
- Meet ACR, ECR, and AIUM QA requirements
- Doppler 403™ Flow Phantom ideal for abdominal flow measurements
- Mini-Doppler 1430™ Flow Phantom ideal for cardiology and musculoskeletal applications

Unparalleled Tissue Mimicking
- Blood-mimicking fluid ultrasonically similar to human tissue
- Patented High Equivalency Gel® (HE Gel®) offers tissue mimicking for evaluating image uniformity, detecting dead transducer elements, and assessing maximum penetration depth

Mini-Doppler 1430™ Flow Phantom
PN 805660 (0.5 dB/cm/MHz), PN 805661 (0.7)
PN 805204 (0.5 dB/cm/MHz), PN 805206 (0.7)

Sono403™ Phantom
Multi-Purpose Ultrasound Phantom
PN 802259 (0.5 dB/cm/MHz), PN 802260 (0.7)

Multi-Purpose B-Mode Ultrasound QA
- Ensure accurate ultrasound system imaging
- Generally compatible with AIUM, ACR, AAPM, IEC 62736, IPEM 102, and EFSUMB TQA QA Guidelines
- Verify system settings and depth of penetration for small to very large patients
- Simulates typical depth through abdomen to the liver
- Precisely placed targets support grey scale and axial resolution system measurements

Unparalleled Tissue Mimicking
- Patented High Equivalency Gel® (HE Gel®) provides multi-frequency, high quality, reproducible images
- Test across the entire frequency range (2 - 18 MHz)

Included Warranty
- 5-year warranty, the longest warranty available for ultrasound QA phantoms

Sono403™ Phantom
Multi-Purpose Ultrasound Phantom
PN 805660 (0.5 dB/cm/MHz), PN 805661 (0.7)

Specifications
- Attenuation Coefficient: 0.5 or 0.7 dB/cm/MHz
- Variation of Attenuation with Frequency: F1.08 at 0.5 dB/cm/MHz, F1.1 at 0.7 dB/cm/MHz
- HE Gel Freezing Point: < 0°C
- HE Gel Melting Point: >100°C
- Frequency Range: 2 - 18 MHz
- Speed of Sound: 1540 m/s
- Scanning Surface: Composite Film
- Pin Target Material: Nylon monofilament
- Cystic Targets Diameters & Placement: 2, 4, 6, and 10 mm; 3, 7, 8, and 14 cm deep
- Grey Scale Target Diameters & Placement: 10 mm; 6 cm deep
- Pin Targets Diameter & Placement: 0.1 mm; 2 cm at 10 to 16 cm deep, 1 cm at 2 and 12 cm deep, 0.5 cm at 2 and 10 cm deep
- Resolution Target Groups: 3, 8, and 14 cm deep
- Case Material: Extruded ABS Plastic
- Weight: >2.8 kg (6 lbs. 5 oz.)
- Dimensions: 23.2 x 8.25 x 18.5 cm (9.25 x 3.25 x 7.25 in.)

*U.S. Patent No. 6,352,860

Multi-Purpose B-Mode Ultrasound QA
- Ensure accurate ultrasound system imaging
- Generally compatible with AIUM, ACR, AAPM, IEC 62736, IPEM 102, and EFSUMB TQA QA Guidelines
- Verify system settings and depth of penetration for small to very large patients
- Simulates typical depth through abdomen to the liver
- Precisely placed targets support grey scale and axial resolution system measurements

Unparalleled Tissue Mimicking
- Patented High Equivalency Gel® (HE Gel®) provides multi-frequency, high quality, reproducible images
- Test across the entire frequency range (2 - 18 MHz)

Included Warranty
- 5-year warranty, the longest warranty available for ultrasound QA phantoms

Sono403™ Phantom
Multi-Purpose Ultrasound Phantom
PN 805660 (0.5 dB/cm/MHz), PN 805661 (0.7)

Specifications
- Attenuation Coefficient: 0.5 or 0.7 dB/cm/MHz
- Variation of Attenuation with Frequency: F1.08 at 0.5 dB/cm/MHz, F1.1 at 0.7 dB/cm/MHz
- HE Gel Freezing Point: < 0°C
- HE Gel Melting Point: >100°C
- Frequency Range: 2 - 18 MHz
- Speed of Sound: 1540 m/s
- Scanning Surface: Composite Film
- Pin Target Material: Nylon monofilament
- Cystic Targets Diameters & Placement: 2, 4, 6, and 10 mm; 3, 7, 8, and 14 cm deep
- Grey Scale Target Diameters & Placement: 10 mm; 6 cm deep
- Pin Targets Diameter & Placement: 0.1 mm; 2 cm at 10 to 16 cm deep, 1 cm at 2 and 12 cm deep, 0.5 cm at 2 and 10 cm deep
- Resolution Target Groups: 3, 8, and 14 cm deep
- Case Material: Extruded ABS Plastic
- Weight: >2.8 kg (6 lbs. 5 oz.)
- Dimensions: 23.2 x 8.25 x 18.5 cm (9.25 x 3.25 x 7.25 in.)

*U.S. Patent No. 6,352,860
**Sono404™ Phantom**
Small Parts Ultrasound Phantom
PN 802261 (0.5 dB/cm/MHz), PN 802262 (0.7)

Small Parts B-Mode Ultrasound QA
- Ensure accurate ultrasound system imaging
- Generally compatible with AIUM, ACR, AAPM, IEC 62736, IPEM 102, and EFSUMB TQA QA Guidelines
- Supports Cardiology, Breast Care, Musculoskeletal and Vascular applications
- Closely spaced pin targets make it ideal for testing high frequency transducers
- Enables training and testing the most difficult cases, including small parts and intra-cavity ultrasound systems

Unparalleled Tissue Mimicking
- Patented High Equivalency Gel* (HE Gel™) provides multi-frequency, high quality, reproducible images
- Test across the entire frequency range (2 - 18 MHz)

Included Warranty
- 5-year warranty, the longest warranty available for ultrasound QA phantoms

**Specifications**

<table>
<thead>
<tr>
<th>Attribute</th>
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<tr>
<td>Attenuation Coefficient</td>
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<td>$f^{1.08}$ at 0.5 dB/cm/MHz</td>
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<td>Frequency</td>
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<tr>
<td>HE Gel Freezing Point</td>
<td>&lt; 0°C</td>
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<tr>
<td>Pin Target Material</td>
<td>Nylon monofilament</td>
</tr>
<tr>
<td>Cystic Targets Diameters &amp;</td>
<td>1, 2, 4 and 7 mm, 1, 3, 3.5 and cm deep</td>
</tr>
<tr>
<td>Placement</td>
<td>6 cm deep</td>
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<tr>
<td>Grey Scale Target Diameters &amp;</td>
<td>7 mm, 3 cm deep</td>
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<td>Placement</td>
<td></td>
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<tr>
<td>Pin Targets Diameter &amp;</td>
<td>0.1 mm, 5 mm at 1 to 9 cm deep</td>
</tr>
<tr>
<td>Placement</td>
<td>vertical spacing, 10 mm at 1 and 5 cm deep horizontal spacing</td>
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<tr>
<td>Resolution Target Groups</td>
<td>1, 3.5 and 6 cm deep</td>
</tr>
<tr>
<td>Depths</td>
<td></td>
</tr>
<tr>
<td>Case Material</td>
<td>Extruded ABS Plastic</td>
</tr>
<tr>
<td>Weight</td>
<td>1.75 kg (3 lbs. 13 oz)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>17 x 8.25 x 15.875 cm (6.75 x 3.25 x 6.25 in)</td>
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**Troubleshooting B-Mode Ultrasound QA**
- Ensure accurate ultrasound system imaging
- Generally compatible with AIUM, ACR, AAPM, IEC 62736, IPEM 102, and EFSUMB TQA QA Guidelines
- Supports Biomed who need to troubleshoot ultrasound systems
- Two horizontal cross fibers in the middle of the phantom can be used for aligning the transducer and as reference markers to ensure consistent setup over time.
- Triangular grey scale targets support resolution testing of high-performance ultrasound scanners

Unparalleled Tissue Mimicking
- Patented High Equivalency Gel* (HE Gel™) provides multi-frequency, high quality, reproducible images
- Test across the entire frequency range (2 - 18 MHz)

Included Warranty
- 5-year warranty, the longest warranty available for ultrasound QA phantoms

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<tr>
<td>Grey Scale Target Diameters &amp;</td>
<td>9.5 x 9.5 x 13.4 mm, 4 cm deep</td>
</tr>
<tr>
<td>Placement</td>
<td></td>
</tr>
<tr>
<td>Pin Targets Diameter &amp;</td>
<td>0.1 mm, 2 cm at 2 to 16 cm deep</td>
</tr>
<tr>
<td>Placements</td>
<td>vertical spacing, 3 cm at 2 and 12 cm deep horizontal spacing</td>
</tr>
<tr>
<td>Resolution Target Groups</td>
<td>3, 8, and 14 cm</td>
</tr>
<tr>
<td>Depth</td>
<td></td>
</tr>
<tr>
<td>Case Material</td>
<td>Extruded ABS Plastic</td>
</tr>
<tr>
<td>Weight</td>
<td>~2.8 kg (6 lbs. 5 oz)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>23.2 x 8.25 x 18.5 cm (9.25 x 3.25 x 7.25 in)</td>
</tr>
</tbody>
</table>

*U.S. Patent No. 6,352,860

---

**405 GSX Phantom**
Troubleshooting Ultrasound Phantom
PN 802267 (0.5 dB/cm/MHz), PN 802268 (0.7)

Troubleshooting B-Mode Ultrasound QA
- Ensure accurate ultrasound system imaging
- Generally compatible with AIUM, ACR, AAPM, IEC 62736, IPEM 102, and EFSUMB TQA QA Guidelines
- Supports Biomed who need to troubleshoot ultrasound systems
- Two horizontal cross fibers in the middle of the phantom can be used for aligning the transducer and as reference markers to ensure consistent setup over time.
- Triangular grey scale targets support resolution testing of high-performance ultrasound scanners

Unparalleled Tissue Mimicking
- Patented High Equivalency Gel* (HE Gel™) provides multi-frequency, high quality, reproducible images
- Test across the entire frequency range (2 - 18 MHz)

Included Warranty
- 5-year warranty, the longest warranty available for ultrasound QA phantoms

**Specifications**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attenuation Coefficient</td>
<td>0.5 or 0.7 dB/cm/MHz</td>
</tr>
<tr>
<td>Variation of Attenuation with</td>
<td>$f^{1.08}$ at 0.5 dB/cm/MHz</td>
</tr>
<tr>
<td>Frequency</td>
<td>$f^{1.1}$ at 0.7 dB/cm/MHz</td>
</tr>
<tr>
<td>HE Gel Freezing Point</td>
<td>&lt; 0°C</td>
</tr>
<tr>
<td>HE Gel Melting Point</td>
<td>&gt;100°C</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>2 - 18 MHz</td>
</tr>
<tr>
<td>Speed of Sound</td>
<td>1540 m/s</td>
</tr>
<tr>
<td>Scanning Surface</td>
<td>Composite Film</td>
</tr>
<tr>
<td>Pin Target Material</td>
<td>Nylon monofilament</td>
</tr>
<tr>
<td>Cystic Targets Diameters &amp;</td>
<td>2, 4 and 6 mm, 3, 8 and 14 cm deep</td>
</tr>
<tr>
<td>Placement</td>
<td></td>
</tr>
<tr>
<td>Grey Scale Target Diameters &amp;</td>
<td>9.5 x 9.5 x 13.4 mm, 4 cm deep</td>
</tr>
<tr>
<td>Placement</td>
<td></td>
</tr>
<tr>
<td>Pin Targets Diameter &amp;</td>
<td>0.1 mm, 2 cm at 2 to 16 cm deep</td>
</tr>
<tr>
<td>Placements</td>
<td>vertical spacing, 3 cm at 2 and 12 cm deep horizontal spacing</td>
</tr>
<tr>
<td>Resolution Target Groups</td>
<td>3, 8, and 14 cm</td>
</tr>
<tr>
<td>Depth</td>
<td></td>
</tr>
<tr>
<td>Case Material</td>
<td>Extruded ABS Plastic</td>
</tr>
<tr>
<td>Weight</td>
<td>~2.8 kg (6 lbs. 5 oz)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>23.2 x 8.25 x 18.5 cm (9.25 x 3.25 x 7.25 in)</td>
</tr>
</tbody>
</table>

*U.S. Patent No. 6,352,860
### Sono406™ Phantom
**Dual Attenuation Phantom**
PN 802229

**Dual Attenuation B-Mode Ultrasound QA**
- Ensure accurate ultrasound system imaging
- Generally compatible with AIUM, ACR, AAPM, IEC 62736, IPEM 102, and EFSUMB TQA QA Guidelines
- Background attenuations simulate healthy and diseased tissue in a side-by-side configuration to aid characterizing pathological tissue structures
- Evaluation of high resolution ultrasound systems

**Unparalleled Tissue Mimicking**
- Patented High Equivalency Gel* (HE Gel™) provides multi-frequency, high quality, reproducible images
- Test across the entire frequency range (2 - 18 MHz)

**Included Warranty**
- 5-year warranty, the longest warranty available for ultrasound QA phantoms

**Specifications**

<table>
<thead>
<tr>
<th>Attenuation Coefficient¹</th>
<th>0.5 and 0.7 dB/cm/MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variation of Attenuation with Frequency²,³</td>
<td>f¹⁰ at 0.5 dB/cm/MHz</td>
</tr>
<tr>
<td></td>
<td>f¹ at 0.7 dB/cm/MHz</td>
</tr>
<tr>
<td>HE Gel Freezing Point</td>
<td>≤ 0°C</td>
</tr>
<tr>
<td>HE Gel Melting Point</td>
<td>≥100°C</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>2 - 18 MHz</td>
</tr>
<tr>
<td>Speed of Sound</td>
<td>1540 m/s</td>
</tr>
<tr>
<td>Scanning Surface</td>
<td>Composite Film</td>
</tr>
<tr>
<td>Pin Target Material</td>
<td>Nylon monofilament</td>
</tr>
<tr>
<td>Cystic Targets Diameters &amp; Placement</td>
<td>2, 4 and 6 mm, 3, 8 and 14 cm deep</td>
</tr>
<tr>
<td>Pin Targets Diameter &amp; Placements</td>
<td>0.1 mm, 10 mm at 2 to 4 cm deep and 20 mm at 4 to 16 cm deep vertical spacing; 30 mm at 2 and 12 cm deep horizontal spacing; Additional pin spaced at 10 mm in shallow set</td>
</tr>
<tr>
<td>Resolution Target Groups Depth</td>
<td>3, 8, and 14 cm deep</td>
</tr>
<tr>
<td>Case Material</td>
<td>Extruded ABS Plastic</td>
</tr>
<tr>
<td>Weight</td>
<td>~2.8 kg (6 lbs. 5 oz)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>23.2 x 8.25 x 18.5 cm (9.25 x 3.25 x 7.25 in)</td>
</tr>
</tbody>
</table>

*U.S. Patent No. 6,352,860

---

### Sono408™ Phantom
**Spherical Lesion Phantom**
PN 802271 (0.5 dB/cm/MHz), PN 805157 (0.7)

**Spherical Lesion B-Mode Ultrasound QA**
- Ensure accurate ultrasound system imaging
- Generally compatible with AIUM, ACR, AAPM, IEC 62736, IPEM 102, and EFSUMB TQA QA Guidelines
- Ensure system presets are based image quality, not default settings, for optimal performance
- Ideal for spherical lesions that have negligible echogenicity and produce no distal enhancement or shadowing
- Supports testing high-frequency transducers used in echocardiography

**Unparalleled Tissue Mimicking**
- Patented High Equivalency Gel* (HE Gel™) provides multi-frequency, high quality, reproducible images
- Test across the entire frequency range (2 - 18 MHz)

**Included Warranty**
- 5-year warranty, the longest warranty available for ultrasound QA phantoms

**Specifications**

<table>
<thead>
<tr>
<th>Attenuation Coefficient¹</th>
<th>0.5 or 0.7 dB/cm/MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variation of Attenuation with Frequency²,³</td>
<td>f¹⁰ at 0.5 dB/cm/MHz</td>
</tr>
<tr>
<td></td>
<td>f¹ at 0.7 dB/cm/MHz</td>
</tr>
<tr>
<td>HE Gel Freezing Point</td>
<td>≤ 0°C</td>
</tr>
<tr>
<td>HE Gel Melting Point</td>
<td>≥100°C</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>2 - 18 MHz</td>
</tr>
<tr>
<td>Speed of Sound</td>
<td>1540 m/s</td>
</tr>
<tr>
<td>Scanning Surface</td>
<td>Composite Film</td>
</tr>
<tr>
<td>Cystic Targets Diameters &amp; Placement</td>
<td>2 and 4 mm; 2 mm at 0.5 to 10.5 cm deep and 4 mm at 0.5 to 16 cm deep</td>
</tr>
<tr>
<td>Case Material</td>
<td>Extruded ABS Plastic</td>
</tr>
<tr>
<td>Weight</td>
<td>2.8 kg (6 lbs. 5 oz)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>23.2 x 8.25 x 18.5 cm (9.25 x 3.25 x 7.25 in)</td>
</tr>
</tbody>
</table>

*U.S. Patent No. 6,352,860
Sono410™ Phantom

Full Contact™ Phantom
PN 805546 (0.5 dB/cm/MHz), PN 805547 (0.7)

Full Contact B-Mode Ultrasound QA
- Ensure accurate ultrasound system imaging
- Generally compatible with AIUM, ACR, AAPM, IEC 62736, IPERM 102, and EFSUMB TQA QA Guidelines
- Includes two patented scanning surfaces — curved and flat — for precise performance and uniformity testing of convex and linear transducers
- Patented curved surface improves coupling between convex transducers and phantom scanning window
- Ideal for compliance testing of image quality of high-resolution Ultrasound Systems in breast care centers and diagnostic ultrasound departments

Unparalleled Tissue Mimicking
- Patented High Equivalency Gel* (HE Gel™) provides multi-frequency, high quality, reproducible images
- Test across the entire frequency range (2 - 18 MHz)

Included Warranty
- 5-year warranty, the longest warranty available for ultrasound QA phantoms

Specifications

<table>
<thead>
<tr>
<th>Attenuation Coefficient</th>
<th>0.5 or 0.7 dB/cm/MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variation of Attenuation with Frequency</td>
<td>F&lt;sup&gt;2&lt;/sup&gt; at 0.5 dB/cm/MHz, F&lt;sup&gt;1&lt;/sup&gt; at 0.7 dB/cm/MHz</td>
</tr>
<tr>
<td>HE Gel Freezing Point</td>
<td>&lt; 0°C</td>
</tr>
<tr>
<td>HE Gel Melting Point</td>
<td>&gt;100°C</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>2 - 18 MHz</td>
</tr>
<tr>
<td>Speed of Sound</td>
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</tr>
<tr>
<td>Scanning Surface</td>
<td>Composite Film</td>
</tr>
<tr>
<td>Pin Target Material</td>
<td>Nylon monofilament</td>
</tr>
<tr>
<td>Cystic Targets Diameters &amp; Placement</td>
<td>1, 2 and 4 mm; 2, 4, 6, 8, 10, 12, 14 and 16 cm deep</td>
</tr>
<tr>
<td>Grey Scale Target Diameters &amp; Placement</td>
<td>8 mm; 4 and 11 cm deep</td>
</tr>
<tr>
<td>String Targets Diameter &amp; Placement</td>
<td>0.1 mm, 1, 2 and 4 cm from 1 to 15 cm deep; 2 cm deep; 2 cm at 7 and 13 cm deep horizontal spacing</td>
</tr>
<tr>
<td>Case Material</td>
<td>Extruded ABS Plastic</td>
</tr>
<tr>
<td>Weight</td>
<td>~2.8 kg (6 lbs. 5 oz)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>21.8 x 9 x 19.2 cm (8.6 x 3.5 x 7.5 in)</td>
</tr>
</tbody>
</table>

*S. Patent No. 6,352,860

SonoTE™ Phantoms
Uniformity Testing for Linear, Convex, & Intercavity Transducers
PN 805331

Transducer Evaluation
- Low-cost, high-value ultrasound transducer evaluation device
- Perform uniformity tests for linear, convex and intercavity transducers

Specifications

<table>
<thead>
<tr>
<th>Material</th>
<th>Silicone base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (L/W/H)</td>
<td>11.5 x 5.7 x 7.5 cm (4.6 x 2.2 x 3 in)</td>
</tr>
<tr>
<td>Weight</td>
<td>580 +/- 5 g (1 lb. 4 oz)</td>
</tr>
</tbody>
</table>

*S. Patent No. 6,352,860
Mammo FFDM™ Phantom
Full Field Digital Mammography
PN 806022

Ensure Optimal FFDM Performance
- Evaluate artifacts over the entire detector with a single image
- Meet ACR, MSQA and EUREF requirements
- Test objects designed and located per ACR specifications, and reduced backscatter and equalized attenuation
- Meets ACR 2018 Digital Mammography Quality Control Manual requirements

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>Wax and acrylic equivalent to 4.2 cm thick compressed breast tissue</td>
</tr>
<tr>
<td>Nylon Fibers</td>
<td>6</td>
</tr>
<tr>
<td>Specks</td>
<td>6 Groups, Glass Spheres</td>
</tr>
<tr>
<td>Masses</td>
<td>6</td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>31.0 ± 0.1 x 19.1 ± 0.1 x 4.1 ± 0.03 cm</td>
</tr>
<tr>
<td>Dimensions: Wax Insert (L x W x H)</td>
<td>12.98 ± 0.04 x 6.98 ± 0.04 x 0.7 ± 0.02 cm</td>
</tr>
<tr>
<td>CNR Cavity Depth</td>
<td>0.1 ± 0.005 cm</td>
</tr>
<tr>
<td>CNR Diameter</td>
<td>2.0 ± 0.05 cm</td>
</tr>
<tr>
<td>Compensator</td>
<td>9 mil Polyvinylidene Chloride</td>
</tr>
<tr>
<td>Case</td>
<td>Soft case included, Optional custom hard-sided case, with 1-year warranty, available (PN 805772)</td>
</tr>
</tbody>
</table>

See sunnuclear.com for wax insert test object specifications.

Acceptance Testing for 3D Tomosynthesis Systems
- Includes PMMA plates, spacers, aluminum plates and foils, steel plates and customized test tools
- Meet IEC Protocol 601223-3-6, EUREF/EFOMP 1.03 (Tomosynthesis), & German DIN 6868-14 requirements

Mammo 3D™ Performance Kit
Digital Mammography System QC
PN 805857

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMMA Plates, Spacers, &amp; Phantoms</td>
<td></td>
</tr>
<tr>
<td>Standard Test Plate</td>
<td>1 - 320 x 260 x 45 mm</td>
</tr>
<tr>
<td>10 mm PMMA Plate</td>
<td>7 - 320 x 260 x 10 mm</td>
</tr>
<tr>
<td>15 mm PMMA Plate</td>
<td>1 - 320 x 260 x 5 mm</td>
</tr>
<tr>
<td>2 mm PMMA Plates</td>
<td>7 - 40 x 20 x 2 mm</td>
</tr>
<tr>
<td>10 mm PMMA Spacers</td>
<td>2 - 180 x 15 x 10 mm</td>
</tr>
<tr>
<td>30 mm PMMA Spacers</td>
<td>2 - 180 x 30 x 30 mm</td>
</tr>
<tr>
<td>Geometric Distortion &amp; Z-Resolution Phantom</td>
<td>1 - 320 x 260 x 5 mm</td>
</tr>
<tr>
<td>Aluminum Plates &amp; Foils</td>
<td></td>
</tr>
<tr>
<td>2 mm Aluminum Plate</td>
<td>1 - 100 x 100 x 2 mm</td>
</tr>
<tr>
<td>0.2 mm Aluminum Foil Sheet</td>
<td>1 - 10 x 10 x 0.2 mm</td>
</tr>
<tr>
<td>0.1 mm Aluminum Foil Sheets</td>
<td>8 - 100 x 100 x 0.1 mm</td>
</tr>
<tr>
<td>Steel Plates</td>
<td>3 mm Stainless Steel Plate</td>
</tr>
<tr>
<td>MTF Edge Tool</td>
<td>1 - 120 x 60 x 0.6 mm</td>
</tr>
<tr>
<td>Wire, Spacers, X-ray Rulers</td>
<td></td>
</tr>
<tr>
<td>25 micron Tungsten Wire (cm)</td>
<td>100</td>
</tr>
<tr>
<td>Polystyrene Foam Spacers</td>
<td>5 - 240 x 180 x 20 mm</td>
</tr>
<tr>
<td>1mm scale X-ray Rulers</td>
<td>4 - 2.5 to -5 cm</td>
</tr>
<tr>
<td>Case</td>
<td>Custom Hard Case Included</td>
</tr>
</tbody>
</table>
Measure & Monitor Digital Mammography Systems
- Meet ACR and MQSA requirements
- Simulates radiographic characteristics of 4.2 cm compressed breast tissue
- Quickly detect objects from 0.16 to 2.0 mm
- Includes 4 mm acrylic disc included to establish and monitor density differences

Specifications
Materials: Wax and acrylic equivalent to 4.2 cm thick compressed breast tissue. 50% adipose & 50% glandular.
Nylon Fibers (Fibrils): 6
Micro-califications: 5 Groups
Masses: 5
Dimensions (L x W x H): 10.2 x 10.8 x 4.5 cm
Case (PN 805296): Optional soft-sided case with foam insert, with 1-year warranty

Mammo 156™ Phantom
Digital Mammography System QC
PN 800004

Stereotactic Breast Biopsy QC
- Meet ACR and MQSA requirements
- Quickly detect objects from 0.20 to 1.00 mm — visible on any system, but, by design, difficult to see on the best stereotactic mammography systems
- Can hang on the biopsy system detector during rotation

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

See sunnuclear.com for Image Quality Module specifications.

Mammo 156D™ Phantom
Biopsy and Localization
PN 805298

Comprehensive Digital Testing
- Stack of modules supports a variety of tests for digital breast tomosynthesis systems
- Meet AAPM developing TG-245 and IEC 61223-3-6 requirements

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

See sunnuclear.com for Image Quality Module specifications.

Modular DBT™ Phantom
Thorough Tomosynthesis System Performance Testing
PN 805817

Independent Verify Beam Qualities
- Stack of modules supports a variety of tests across a range of iodine concentrations and breast glandularity
- Blocks can be arranged to represent compressed breast for small to large patients

Specifications
Overall Weight | 1.8 kg (4 lbs)
Carying Case Weight | 1.4 kg (3 lbs)
Overall Stack Dimensions (L x W x H) | 181 x 100 x 100 mm (7-1/8 x 4 x 4 in)
Hard Case | Included
Warranty | 5 years

Mammo CESM™ Phantom
QC for Contrast Enhanced Spectral Mammography
PN 805929

Materials
- 1454 HE Breast 50/50, 1454 HE Breast 50/50 doped with 10 mg/ml Iodine (pink)
- 1453 HE Br. Adipose (yellow), 1466 HE Glandular (purple)
- 1545 HE Breast (50/50, 50/50, 50/50, 50/50)
- 1453 HE Br. Adipose (yellow), 1466 HE Glandular (purple)
- 10 mm
- 10 mm
- 10 mm
- 1 mm
- 2.5 mm
- 5 mm
**Stereotactic Breast Biopsy Phantom**
Easy-to-Use Mammography Training Tool
PN 800006

**Needle Insertion Practice Phantom**
- Multiple imbedded radiopaque gel lesions (sized 2 – 5 mm) for practicing core biopsies
- Liquid dye lesions for fine needle aspiration
- Made of clear gel encased in soft vinyl for easy compression and skin-like resistance to needle insertion

**Specifications**

<table>
<thead>
<tr>
<th>Construction</th>
<th>Gel with attenuation properties similar to breast tissue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer Casing</td>
<td>Vinyl</td>
</tr>
<tr>
<td>Multiple Radiopaque Lesions</td>
<td>2 to 5 mm</td>
</tr>
<tr>
<td>Materials</td>
<td>Solid Gel for core biopsy, Liquid dye for fine needle aspiration</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>5 – 32°C (40 to 60°F)</td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>21 x 6 x 11 cm</td>
</tr>
<tr>
<td>Weight</td>
<td>1.06 kg (2.4 lb)</td>
</tr>
</tbody>
</table>

**Lesion Location & Needle Insertion Practice**
- Scan the phantom using clinical settings, and watch the ultrasound display as the needle is inserted into cysts and lesions
- Skin-like resistance to needle insertion
- ultrasound appearance simulates soft tissue
- Supports multiple needle punctures over time (when stored per manufacturer guidelines)

**Specifications**

<table>
<thead>
<tr>
<th>Fluid-filled Cysts</th>
<th>3 cysts, 12 to 15 mm diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Contrast Lesions</td>
<td>Solid masses, 7 to 10 mm diameter</td>
</tr>
<tr>
<td>Low Contrast Lesions</td>
<td>4 solid masses, 7 to 10 mm diameter</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>90° to 40°F</td>
</tr>
<tr>
<td>Diameter</td>
<td>12.7 cm</td>
</tr>
<tr>
<td>Height</td>
<td>7.6 cm</td>
</tr>
<tr>
<td>Weight</td>
<td>625 g (1 lb. 6 oz.)</td>
</tr>
</tbody>
</table>

**Mammo Digital Compression Device**
Compression Force Measurement for Accuracy and Reproducibility
PN 805939

**Specifications**

<table>
<thead>
<tr>
<th>Accuracy</th>
<th>±0.01 lb [0 - 2 lb], ±0.02 lb [2 – 7.5 lb]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Units</td>
<td>g, lb, oz, kg, lb, oz</td>
</tr>
<tr>
<td>Scale Dimensions</td>
<td>8.9 x 8.2 x 2.0 in (225 x 208 x 73 mm)</td>
</tr>
<tr>
<td>Foam Compression Block (included)</td>
<td>Polyethylene Foam</td>
</tr>
<tr>
<td>Scale Weight</td>
<td>2 lbs. (0.95 kg)</td>
</tr>
<tr>
<td>Power</td>
<td>Alkaline Batteries Size C (4x), not included</td>
</tr>
<tr>
<td>RoHS Compliant, CE Mark</td>
<td>Yes</td>
</tr>
<tr>
<td>Case (PN 805972)</td>
<td>Optional Soft Case not included</td>
</tr>
</tbody>
</table>

**Key Mammography QA Resources**
Go to sunnuclear.com for:
- Demos: Request One-on-One Presentations
- Webinar: Customer Experience with Mammography FFDM Phantom
- Datasheets: Mammography Phantoms
Fluoroscopic Dose Rate & Low Contrast Resolution Test Tool Kit
PN 800421

Lead Blocker
PN 800598

Construction
2 Aluminum Blocks, 1 Lead Blocker, 1 Aluminum Resolution Plate

Dimensions
18 x 18 x 4.5 cm (7 x 7 x 1.8 in)

Weight
4 kg (8.8 lbs)

Warranty
5 Years

High Contrast Resolution Test Tool
(141H) – High-Res, 60-150 Mesh; (141) – Standard, 16-60 Mesh
PN 800417, PN 800416

Contrast Detail Tool
PN 801745

Construction
White Plastic (outside)

Wire Mesh Patterns (inside)
8 - 60 to 150 mesh (141H High-Res)
8 - 16 to 60 mesh (141 Standard)

Dimensions
18 x 18 x 1 cm (7 x 7 x 0.4 in)

Weight
113 g (4 oz)

Warranty
1 Year

Half Value Layer Attenuator Set, Pure Copper (116)
PN 800414

Construction
6061 Aluminum Alloy

Steps
Eleven (11) steps, 3.2 mm high and 12.7 mm deep

Dimensions
14 x 6 cm (5.5 x 2.4 in)

Weight
450 g

Contrast Detail Tool
PN 801745

Material
6061 Aluminum

Hole Depths
0.13 to 2.29 mm

Hole Diameters
0.58 to 7.93 mm

Dimensions (L/W/H)
18.0 x 18.0 x 1.3 cm
(7.1 in x 7.1 in x 0.5 in)

Weight
1.0 kg (2.2 lbs)

Half Value Layer Attenuator Set, Copper Alloy 110
PN 805159

Construction
Copper Alloy 110

Dimensions
5 pieces, each 17 cm x 17 cm x 0.5 mm

Radiographic Aluminum Stepwedge, 11 Steps (117)
PN 800414

Construction
6061 Aluminum Alloy

Steps
Eleven (11) steps, 3.2 mm high and 12.7 mm deep

Dimensions
14 x 6 cm (5.5 x 2.4 in)

Weight
450 g
Ultra Star Test Pattern (1-360°) & Ultra Star Test Pattern (4-15°)  
PN 800021, PN 800431

Anthropomorphic Neo-Natal Chest Phantom  
PN 805248

Resolution Test Pattern, 5.0-20 LP/mm, 16 groups  
PN 800647

Resolution Test Pattern, 0.6-5.0 bar, 20 groups  
PN 800438

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**Ultra Star Test Pattern**
- Lead Foil Thickness: 0.05 mm
- Diameter: 55 mm
- Angle of Single Line within a Sector: 0.5°
- Number and Size of Patterned Sector: 1-360°; 4-15°
- Focal Spot Size Measured: 0.1-0.3 mm
- Warranty: 5 Years

**Anthropomorphic Neo-Natal Chest Phantom**
- Size: Approx. 100 x 100 x 54 mm
- Weight: Approx. 500 grams
- Composition: Tissue Equivalent Materials: Air, Muscle, Normal Lung, Hyaline Membrane Lung, Bone
- Warranty: 5 Years

**Resolution Test Pattern, 5.0-20 LP/mm, 16 groups**
- Resolution: 5.0 - 20 lp/mm
- Dimensions: 8 x 28 mm (5/16x 1-7/16 in)
- Thickness: 0.03 mm

**Resolution Test Pattern, 0.6-5.0 bar, 20 groups**
- Resolution: 0.6 to 5.0 lp/mm
- Dimensions: 50 x 50 mm (1.9 x 1.9 in)
- Thickness: PN 800438 0.01 mm
  - PN 800439 0.10 mm

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**Focal Spot Test Tool**  
PN 800428

- Construction: Six-inch acrylic cylinder with a 12 group bar pattern target mounted on top
- Dimensions: 0.84 to 5.66 lp/mm
- Warranty: 5 Years

**Universal Test Stand (175)**  
PN 802203

- Dimensions: 26.7 x 22.2 cm at base (10.5 x 8.75 in)
  - 11.1 x 11.1 cm at top (4.4 x 4.4 in)
- Height: Adjustable from 36.2 cm to 66.0 cm (14.3 to 20 in)
- Weight: 4.2 kg (9.3 lbs)

**Resolution Test Pattern, 1 sector**  
PN 800437

- Dimensions: 157 x 50 mm (6.2 x 1.9 in)
- Weight: 9 g (0.3 oz)

**Resolution Test Pattern, 0.5-4.86 LP/mm bar, 16 groups**  
PN 800436

- Dimensions: 110 x 40 mm (4.3 x 1.6 in)
- Weight: 9 g (0.3 oz)