Radiological Quality Assurance

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EXPERIENCE & EXPERTISE

Test Tools

Radiography / Fluoroscopy Phantoms

Nuclear Medicine Phantoms

MRI Phantoms

Mammography Phantoms

CT Phantoms

Dental Phantoms

Ultrasound Phantoms

Biopsy Phantoms

Radiation Protection

QUART didoEASY

The QUART didoEASY meters are designed for users who emphasise high precision in dosimetric applications but do not require the performance of a full-range dosemeter package.

QUART didoEASY meters can be used to measure parameters which are essential for service and quality assurance operations at X-ray equipment such as dose, dose rate and time with maximum precision.

QUART didoEASY R

The QUART didoEASY R is designed for precision measurement in radiography X-ray QA/ QC. Dose and exposure time are measured for all Rad, Fluoro and Dental applications at equipment using digital or screen-film image acquisition technology. The meter automatically compensates all radiation qualities, no extra corrections are required.

QUART didoEASY M

The QUART didoEASY M is designed for precision measurement in mammography X-ray QA/QC. Dose and exposure time are measured for all mammography applications at equipment using digital or screen-film image acquisition technology.

The technical approach of the didoEASY M enables measurement of all mammography radiation qualities currently in use: Mo/Mo, Mo/Rh, Rh/Rh, W/Rh, W/Ag - with or without compression paddle in the beam. It autmatically compensates open and attenuated Mo/Mo measurements, a correction table for other target/filters is provided.

QUART didoEASY MR

The QUART didoEASY MR is a special configuration in the EASY series. The MR version features two detectors (M+R) for Mammo and RAD/Fluoro/Dental applications.

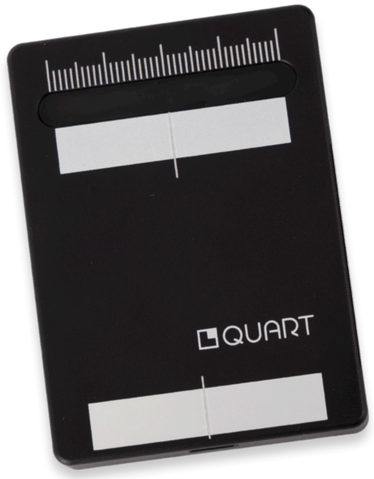
QUART nonius Digital X-ray Ruler

The QUART nonius is an easy-to-use, sophisticated measuring instrument used to verify size and geometrical properties of x-ray fields. It can also be used to analyse characteristics of fanned x-ray beams as used in CT or dental panoramic x-ray (OPG).

The QUART nonius is incredibly flexible: it it suitable for digital as well as conventional x-ray modalities such as Mammography, Dental, Fluoroscopy, Radiological and CT. In any case, its precision is an absolute strong point – as it achieves a resolution in the so-called nonius range of 0.1 mm.

The nonius software to operate the device is available as single or multi-user on-premise installation.

- Alignment of light field and radiation field.
- Alignment of radiation field and detector.
- X-Ray field geometry and alignment.
- Fan-Beam geometry and alignment.



QUART didoNEO X-ray Multi-Meter

Designed for service and quality assurance in R&F and Dental, the QUART didoNEO line of meters offer a new approach to diagnostic X-ray measurement.

Base Unit

The didoNEO's base unit and detector are both optimised in size and weight. They represent the most compact X-ray meter sensor and base unit in the industry.

The unit screen enables an exposure wave form preview – simply tilt the device to show. Zoom-in and out for detailed visual analysis of the exposure graph.

Detector

The compact detector design enables measurements at locations with limited space, for instance behind scatter radiation grids to determine the equipment attenuation factor. The small size also has a very low influence on fluoroscopy AEC.

The detector can be easily and efficiently positioned at dental panoramic X-ray equipment.

Features

- The system features the smallest and thinnest multi-parameter detector available.
- The lightest multifunctional base unit ever designed in the industry.
- The user can access a waveform preview on the units display in the field – without the need to access a PC or laptop.
- Up to 10,000 exposures can be stored in full for future reference or reporting.
- Together with the system, several system options are available providing functional enhancement.
- Technical Upgrades will future proof the meters to cater for changes in user requirements.

Parameters

- Dose.
- Dose-Width Product.
- Dose Rate Real-time / Maximum / Average / Half Exposure.
- kV max. / kV eff. (PPV).
- Pulse / Pulse Rate.
- Exposure Time / Radiation Time.
- Direct-HVL.
- Total Filtration.

HVL Filter

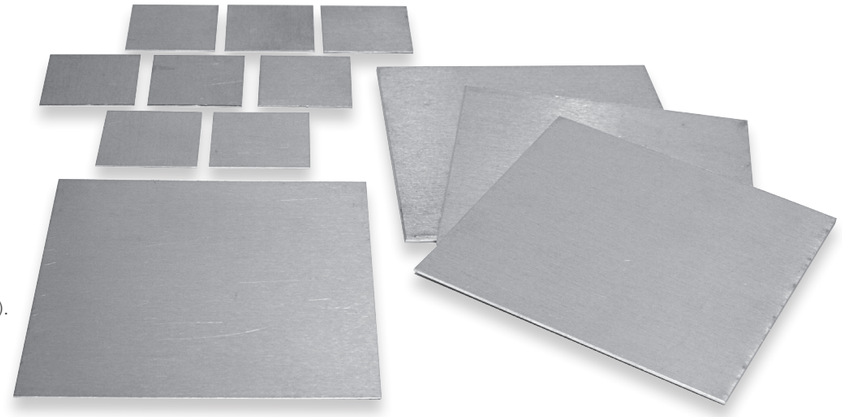
Aluminium filter set for measuring half value layers (type 1100, 99,0% purity).

The kit can be used in both mammography and radiography and comes in two different sizes:

Small: 14 pieces of 33 x 33 mm filters of different thicknesses (6 x 1 mm, 2 x 0.5 mm, 4 x 0.1 mm, and 2 x 0.05 mm).

Large: 100 x 100 mm filters are also available for use with larger ionisation chambers.

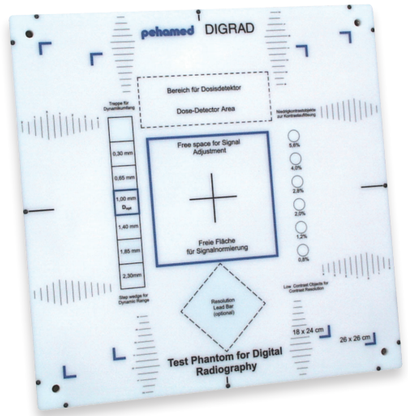
HVL Stand available.



Alpha System Test Tools

Designed to test the relative positions of the X-ray field, light beam diaphragm and vertical X-ray beam alignment, all in one exposure.

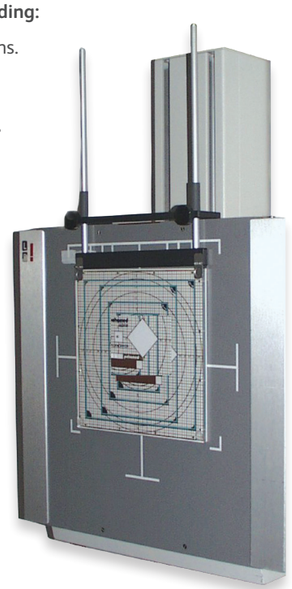
- Alpha Phantom – for testing synchronicity of the radiation field to that of the Light Beam Diaphragm.
- Centre Tube – fixes to the Alpha phantom to check the accuracy of the Vertical Beam Alignment.
- Bucky Wall Stand Holder – an adjustable hanger that supports the Alpha phantom on the face of a vertical Bucky.



DIGRAD Test Phantom

For routine performance testing of DR Imaging systems. DIGRAD phantom is able to test parameters including:

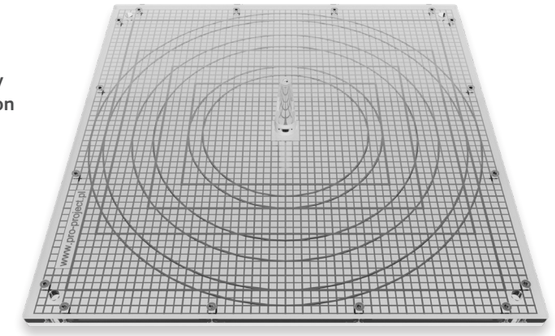
- (Optional) Special holder for vertical bulky systems.
- Dynamic range – 7 step copper step wedge.
- Low contrast detectability 6 objects (15 mm).
- Spatial resolution – Lead bar pattern rotated 45°
- Signal calibration – 10 x 10 cm free area.
- Effective radiation field – Field markings.



Pro-AlphaG

The Pro-AlphaG phantom is a simple tool to check geometry of the R/F system: collimation / beam alignment and position and size of the effective radiation field.

- Lead mesh pattern (5 mm scale) engraved in PMMA plate secured with transparent cover.
- Markings to determine the size and position of the effective radiation field.
- Cone for the perpendicular X-Ray beam control in the range of 0° ÷ 1.5°

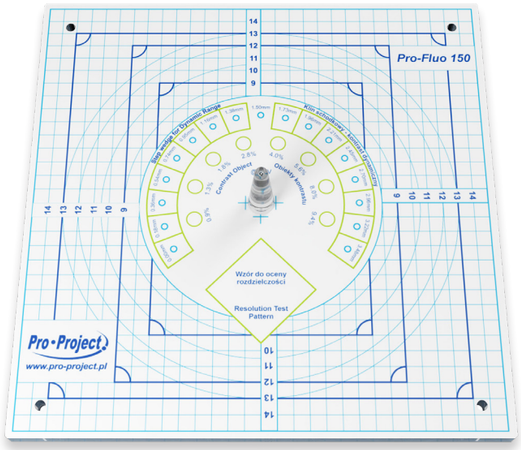


Pro-Fluo 150

The Pro-Fluo 150 phantom is dedicated for acceptance and constancy tests of radiography and fluoroscopy equipment according to the new DIN 6868-150 standard.

It can be used to measure collimation/beam alignment, position and size of the effective radiation field, dynamic range, spatial resolution, contrast resolution, homogeneity, and beam quality.

- 1.5 mm thick copper plate with mesh pattern embedded in PMMA.
- Total PMMA thickness 17 mm.
- 17-step copper wedge (thickness 0.0 mm to 3.48 mm) with additional low contrast details (4 mm diameter).
- 8 low contrast elements (10 mm diameter).
- Pattern for line pair resolution evaluation (from 0.6 to 5.0 LP/mm).
- Markings to determine the size and position of the effective radiation field.
- Cone for perpendicular X-Ray beam control in the range of 0° ÷ 1.5°

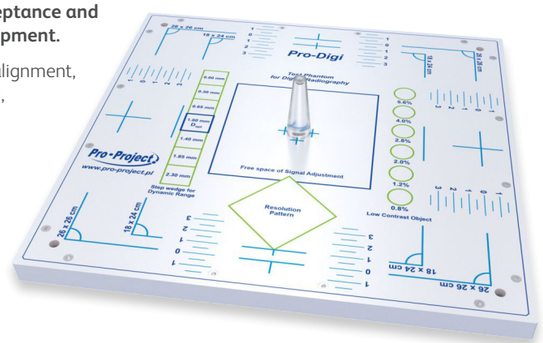


Pro-Digi

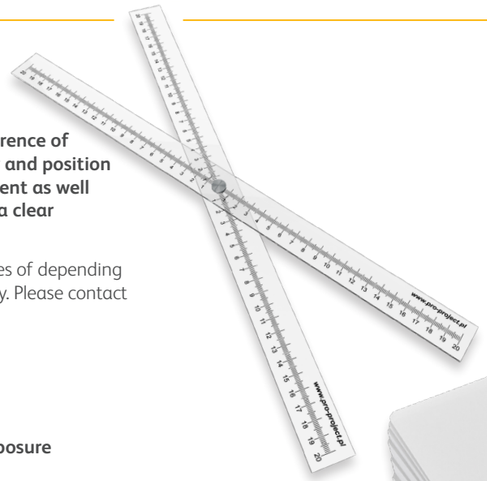
The Pro-Digi phantom is dedicated for acceptance and constancy tests of digital radiography equipment.

It can be used to measure: collimation/beam alignment, position and size of the effective radiation field, dynamic range, spatial resolution, contrast resolution, and homogeneity.

- 7-step copper wedge.
- 6 low contrast elements.
- Free area for signal calibration.
- Markings to determine the size and position of the effective radiation field.
- Pattern for line pair resolution evaluation (from 0.6 to 5.0 LP/mm).
- Optional cone for perpendicular X-ray beam control in the range of 0° ÷ 1.5°



Pro-RF Ruler



The radiopaque ruler provides a permanent reference of image size. It can be used to check the accuracy and position of the light field for quality control and adjustment as well as be included during X-ray procedures, leaving a clear measurement right on the X-ray image itself.

These can be manufactured in various sizes and types of depending on the application, with different scales and accuracy. Please contact us to find the best solution for you.

Pro-RF AEC PMMA

A set of acrylic plates for testing Automated Exposure Control of radiography equipment.

- Made of transparent PMMA.
- Optional 99.5% purity 240 x 240 x 25 mm aluminium plate (02-202).
- Dedicated holder for stabilising PMMA panels vertically.
- Optional carrying case.

Pro-RF AEC Cu

A set of high purity copper plates for testing Automated Exposure Control of radiography equipment. Can be mounted near the X-ray tube and used instead of PMMA plates.

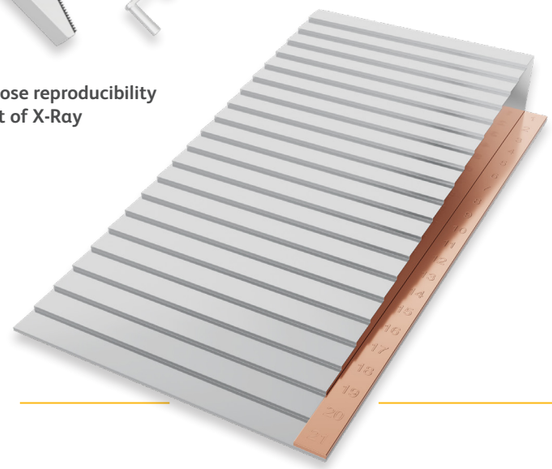
- Made of high purity copper.
- Other sizes of filters upon request.

Pro-RF Rack

A phantom holder for Pro-Alpha, Pro-Digi and Pro-Fluo test phantoms for mounting on Bucky grid wall stands. It allows precise and safe positioning.

- Made of durable aluminium.
- Regulated length.
- Anti-slip pads.

Pro-RF 21 Steps



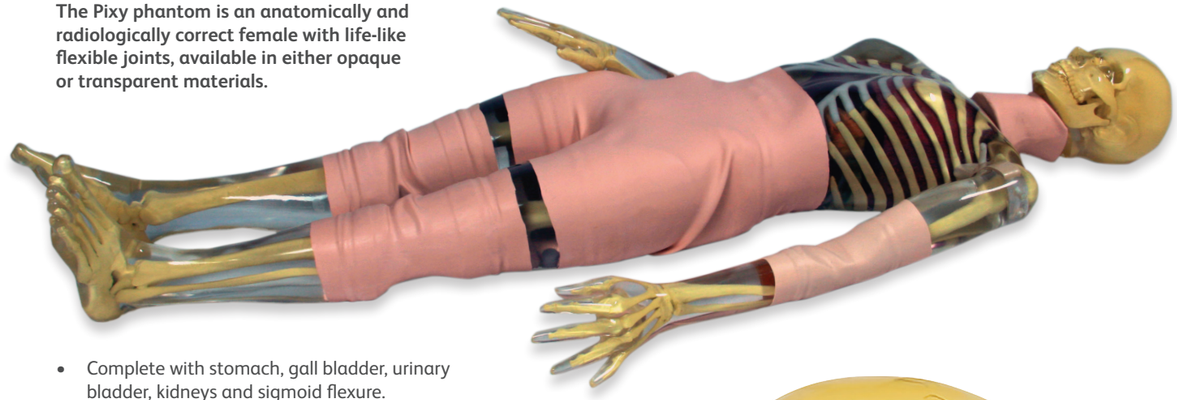
A 21 step aluminium wedge for determination of the dose reproducibility and sensitometric curve shape, speed and mid-gradient of X-Ray screen-film radiography systems.

- Dimensions: 231 x 110 x 31.5 mm.
- 21 steps with a width of 11 mm.
- 1.5 mm graduation per step.
- Made of a highest purity aluminium.
- Copper numbers marking each step.
- Other sizes of step wedges upon request.

Radiography / Fluoroscopy Phantoms

Pixy Anthropomorphic Phantom

The Pixy phantom is an anatomically and radiologically correct female with life-like flexible joints, available in either opaque or transparent materials.



- Complete with stomach, gall bladder, urinary bladder, kidneys and sigmoid flexure.
- Supplied with permanent storage case.
- Allows positioning for most radiographic techniques and organs accept contrast media.
- Demonstrates anatomy and evaluate positioning and imaging techniques, including kVp, mAs, contrast, optical density, OFD and TFD.
- Radiographs of PIXY give an optical equivalent in density and contrast to human patients.

Order Code	Product Description
RSD/RS-102	Opaque PIXY Phantom
RSD/RS-102T	Transparent PIXY Phantom
RSD/RS-157	Animal Lungs
RSD/RS-102SP	Custom Fractures and Pathologies*
RSD/RS-102R	Standard PIXY Refurbishment

Take-Apart Pixy Phantom

Offered in opaque or transparent, the Take-Apart Pixy Phantom is an anatomically and radiologically correct female designed specifically for training radiologic technologists. At 156 cm weighing 48 kg, the Take-Apart Pixy Phantom is a repeatable, convenient substitute for patients and virtually indestructible.

Applications

- Teaching and training of patient positioning.
- Image quality.
- Diagnostic radiology.
- Dosimetry verification.
- Protocol verification.

Modalities

- CT.
- X-ray.
- Fluoroscopy.

Materials

- RSD Soft Tissue.
- RSD Cortical Bone.
- RSD Trabecular Bone.

The Take-Apart Pixy Phantom may be ordered with or without abdominal and pelvic organs: stomach, gall bladder, urinary bladder, kidneys, rectum, and sigmoid flexure. The organs are air-filled but accept water or contrast media that can be easily flushed after use. Custom pathologies and traumas available at an additional cost.

Built with soft-tissue mold and skeleton molds that are matched for anatomic fidelity, the Take-Apart Pixy Phantom permits unlimited exposures, demonstrates the effects of changing technical factors, and allows for evaluation of student performance. Students have no difficulty in manoeuvring the Take-Apart Pixy Phantom into most desired positions as the phantom is built to tolerate trainee errors.

The Take-Apart Pixy Phantom is used to demonstrate anatomy and evaluate positioning and imaging techniques, including kVp, mAs, contrast, optical density, digital processing, OFD and TFD. Made of tissue equivalent materials and life-like articulations, this phantom is more realistic than a cadaveric skeleton with radiographs that are optically equivalent in density and contrast to human patients.

C1, C2, C6, and C7 were converted to mechanical nylon joints because educators in the field prefer full positioning capabilities for the head. This design permits the remaining neck vertebrae to be fixed in a normal position, while assuring a full range of head motion.

The skull of the phantom has frontal and sphenoidal sinuses, ethmoidal and mastoid air cells, and the auditory ossicles. Bone sutures are radiographically visible.

Soft tissues are available in opaque or transparent tissue-equivalent materials. The transparent version has visible organs and skeleton.

The Take-Apart Pixy Phantom's lungs are moulded of a tissue-equivalent foam with the mass density of inflated human lungs (0.30 g/cc). They are connected to the oro-nasal cavity by the stem bronchi and trachea. The oro-nasal pharynx is filled with a nearly air-equivalent foam.

- Shoulders have ball and socket joints.
- Elbows and knees flex 90° to 100°
- A 'frog position' is possible at the hips.
- Right hand is moulded with fingers positioned for an AP view.
- Left hand is in an oblique-lateral position.
- Feet are in a natural position.

Order Code	Product Description
RS-103	Opaque with Fill Ports and Organs
RS-103T	Transparent with Fill Ports and Organs
RS-104	Opaque with Organs but NO Fill Ports
RS-104T	Transparent with Organs but NO Fill Ports
RS-105	Opaque with NO Fill Ports and NO Organs
RS-105T	Transparent with NO Fill Ports and NO Organs

Lung and Chest Phantom

Developed in conjunction with the University of California, Irvine's Department of Radiological Sciences, RSD's Lung and Chest Phantom is specialised at providing a high degree of realism in chest radiography.

RSD materials are equivalent to natural bone and soft tissues. Animal lungs are selected to match the size of an adult male. Lungs are fixed in the inflated state and are molded to conform to the pleural cavities of the phantom. The pulmonary arteries are injected with a blood equivalent plastic. The Lung and Chest Phantom with simulated left coronary artery reveals several areas of coronary artery irregularity and narrowing.

Materials

- RSD Soft Tissue
- RSD Cortical Bone

Order Code	Product Description
RS-310	Permanently sealed diaphragm
RS-315	Permanently sealed diaphragm and left coronary artery
RS-320	Removable diaphragm lung pair insert without coronary artery
RS-330	Removable diaphragm lung pair insert with coronary artery

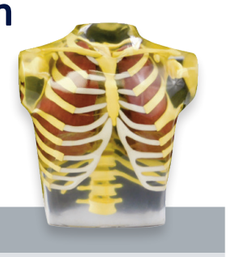
Pelvis Phantom

Materials

- RSD Soft Tissue
- RSD Cortical Bone
- RSD Trabecular Bone

Order Code	Product Description
RS-113	Opaque
RS-113T	Transparent

Thorax Phantom



Materials

- RSD Soft Tissue
- RSD Cortical Bone
- RSD Trabecular Bone

Order Code	Product Description
RS-111	Opaque
RS-111T	Transparent

ART Phantom

Moulded of tissue-equivalent material and intended for accuracy and ease of use, the Alderson Radiation Therapy (ART) Phantom is a refined and improved version of the Alderson RANDO Phantom. ART Phantoms are designed within highly sophisticated technological constraints and follow ICRU-44 standards. Additionally, the phantoms provide integrated tests of the entire chain of treatment planning and delivery.

Applications

- Organ specific dosimetry for all dosimeters (TLD, OSL nanodots, MOSFET, film, ion chambers, and diodes).
- Standard 3 cm x 3 cm or 1.5 cm x 1.5 cm hole grids for dosimeters.
- IMRT organ dose distributions.

Modalities

- External beams in the 0.04 to 40 MeV
- FluoroscopyIntensity-Modulated Radiation Therapy (IMRT).
- Stereotactic Body Radiation Therapy (SBRT).
- GammaKnife.
- CyberKnife.
- CT.
- Cone Beam CT.

Materials

- RSD Soft Tissue.
- RSD Cortical Bone.
- RSD Trabecular Bone.

The ART Phantom is transected-horizontally into 2.5 cm thick slices. Each slice has holes which are plugged with bone-equivalent, soft-tissue-equivalent or lung tissue equivalent pins which can be replaced by TLD holder pins. Holder pins may be ordered separately.

Soft-tissue-equivalent coatings produce slices with glass smooth interfaces. These coatings are cut away over the air spaces of the oronasal pharynges, trachea, and stem bronchi. Dosimetry holes are drilled in grids 3 cm x 3 cm or 1.5 cm x 1.5 cm in 5 and 7 mm diameters thereby allowing for detailed measurements of dose distributions.

Breast Attachments

Breasts are available in various sizes. They can be sliced in frontal planes, drilled or undrilled for film dosimetry. Slices can receive any of the pins listed in the TLD Dosimeters and Fittings section, below. Breasts of male and female ART Phantoms are contoured to blend realistically with the thoraxes and attached with nylon screws. The male chest with attached breasts serves as a large female.

Lungs

Lungs are molded from syntactic foam, with a specific gravity of 0.30 g/cc.

TLD Dosimeters and Fittings

Phantoms are shipped with all dosimetry holes filled with blank pins. Pins for TLD chips have recesses at one end measuring 3.2 x 3.2 x 0.9 mm. Pins for TLD rods have 1 mm-diameter holes cross-drilled at the centers of the pins. All pins are 2.50 cm long unless otherwise specified. Pins may also be ordered to accommodate various types of OSLD dosimeters. Tissue equivalent plugs specifically machined for TLD chips, TLD rods, TLD bars, TLD cubes, MOSFET detectors, as well as LANDAUER® OSL MicroSTAR® and nanoDot® holders, are also available.

Assembly

ART Phantom slices are held between aluminum plates by nylon tie rods. Knobs at the end of the rods clamp the slices tightly in proper alignment. Both internal and external assembly devices are included. The external assembly facilitates film dosimetry, while the internal assembly is used generally with TLDs or ion chamber.

LANDAUER®, MicroSTAR®, and nanoDot® are registered trademarks of LANDAUER®, a division of Fluke® Corporation.

Model Numbers

Grid Hole Spacing	Undrilled	3 x 3 cm	1.5 x 1.5 cm
Male ART Phantom (Sections 0 - 35)	ART-200X	ART-200	ART-200A
Male ART Head & Neck Phantom (Sections 0 - 9)	ART-210X	ART-210	ART-210A
Male ART Chest Phantom (Sections 10 - 25)	ART-211X	ART-211	ART-211A
Male ART Pelvis Phantom (Sections 26 - 35)	ART-212X	ART-212	ART-212A
Female ART Phantom (Sections 0 - 32)	ART-300X	ART-300	ART-300A
Female ART Head & Neck Phantom (Sections 0 - 9)	ART-310X	ART-310	ART-310A
Female ART Chest Phantom (Sections 10 - 23)	ART-311X	ART-311	ART-311A
Female ART Pelvis Phantom (Sections 24 - 32)	ART-312X	ART-312	ART-312A

Radiography / Fluoroscopy Phantoms

Magphan® Phantoms

Magphan® Phantoms are designed to perform a wide range of precision performance evaluations of Magnetic Resonance Imaging (MRI) Scanners.

Precision design for maximum evaluation

The Magphan®'s patented spherical design combines precise alignment of spherical geometry with cubic geometry. As magnetic field characteristics are mapped according to spherical harmonics, natural magnetic fields extend to diagonally symmetric volumes (DSVs), or spheres.

Tests – Summary

- Spatial uniformity.
- Signal-to-noise ratio (SNR).
- Spherical geometry.
- In-vitro sample testing.
- Geometric distortion (spatial linearity).
- Pixel (matrix) size verification.
- Scan slice width and contiguity.
- Verification of patient alignment system.
- Spatial resolution up to 11 line pairs per cm (0.45 mm resolution).
- Low contrast sensitivity.
- T1 and T2 measurements.
- Evaluation of 3-dimensional volume reconstruction.

Spherical Magphan®

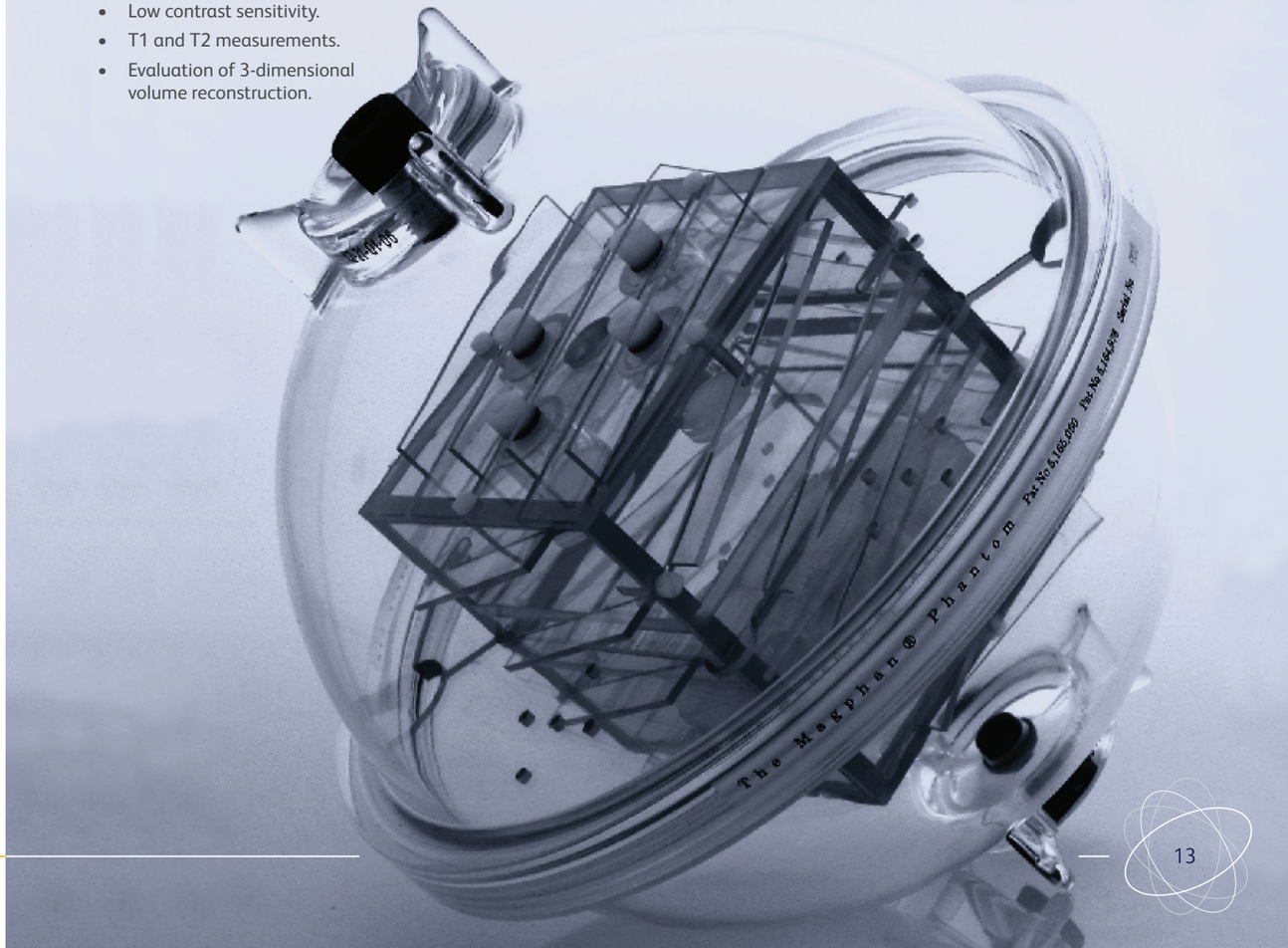
Spherical Magphan® is a urethane sphere composed of two hemispherical shells with an inner diameter of 20 cm. The shells are connected with a simple threaded flange connecting ring. The test cube assembly can be quickly removed without tools for greater imaging flexibility and easy access for cleaning and maintenance.

Cylindrical Magphan®

Cylindrical Magphan® has a removable end plate for internal access. The acrylic cylinder has an outer diameter of 20 cm and an inner diameter of 19 cm.

Magphan® Quantitative Imaging Phantom

The Magphan® Quantitative Imaging Phantom was developed with physicist Richard Mallozzi, Ph.D., to provide detailed mapping of image distortion. The phantom contains an array of polycarbonate spheres. Known and scanned sphere positions are compared, yielding up to fourth-order measurements of scanner distortion.



Catphan® Phantoms

Fast and easy positioning and universal mount makes the Catphan® phantoms ideal for routine quality assurance of any CT scanner.

Comprehensive CT performance measurements

Comprehensive CT performance measurements, internationally recognised for measuring the maximum obtainable performance of axial, spiral, multislice, cone beam and volume CT scanners.

Modular Construction

The Catphan® modular design allows test modules to be interchanged.

As your testing needs change and new modules are developed you can upgrade to test modules that are compatible with your Catphan® system. Additionally, the Catphan® system is ideal for travelling physicists and engineers who conduct comprehensive evaluations of CT scanners at multiple locations as they are easily transportable and no draining is required between uses.

Durable Design

Solid-cast construction eliminates material absorption of water, freezing and leaks associated with water bath phantoms, as well as problems related to varied water sources.

Tests – Summary

- Scan slice geometry (slice width and slice sensitivity profile).
- High resolution (up to 30 line pairs per cm).
- Phantom position verification.
- Patient alignment system check.
- Low contrast sensitivity.
- Comparative subslice and supra-slice low contrast sensitivity.
- Spatial uniformity.
- Scan incrementation.
- Noise (precision) of CT systems.
- Circular symmetry.
- Sensitometry (linearity).
- Pixel (matrix) size.
- Point spread function and modulation transfer function (MTF) for the x, y, and z axes.

Models

Catphan® 500, 600, and 700 are designed for comprehensive evaluation of axial, spiral, multislice, conebeam, and volume CT scanners.

Catphan® 500 Phantom

Complete Catphan including housing and case, equipped with the following test modules:

- Slice width, sensitometry and pixel size.
- 21 line pair high resolution and point source.
- Subslice and supra-slice low contrast.
- Solid image uniformity module.

Catphan® 600 Phantom

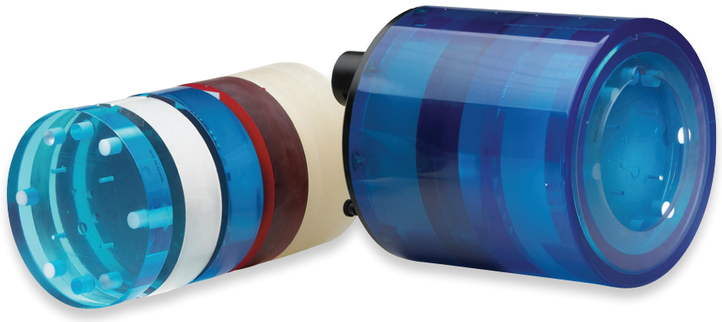
Complete Catphan including housing and case, equipped with the following test modules:

- Slice width, sensitometry and pixel size.
- Bead geometry module.
- 21 line pair high resolution and point source.
- Subslice and supra-slice low contrast.
- Solid image uniformity module.

Catphan® 700 Phantom

Complete Catphan including housing and case, equipped with the following test modules:

- Geometry sensitometry and point source module.
- 30 line pair high resolution and point source.
- Subslice and supra-slice low contrast.
- Wave insert.
- Bead insert.



Pro-NM Performance

The ideal phantom for NM and PET systems performance evaluation (collimator, artifacts, calibration, reconstruction parameters).

It can be used to evaluate, for example: center-of-rotation error, non-uniformity artifacts, changes of radius-of-rotation on spatial resolution, reconstruction filters on spatial resolution, attenuation and scatter compensation.

Main Cylinder

- Inside cylinder diameter: 206 mm
- Inside cylinder height: 186 mm
- Cylinder wall thickness: 7 mm

Cold Rods Insert

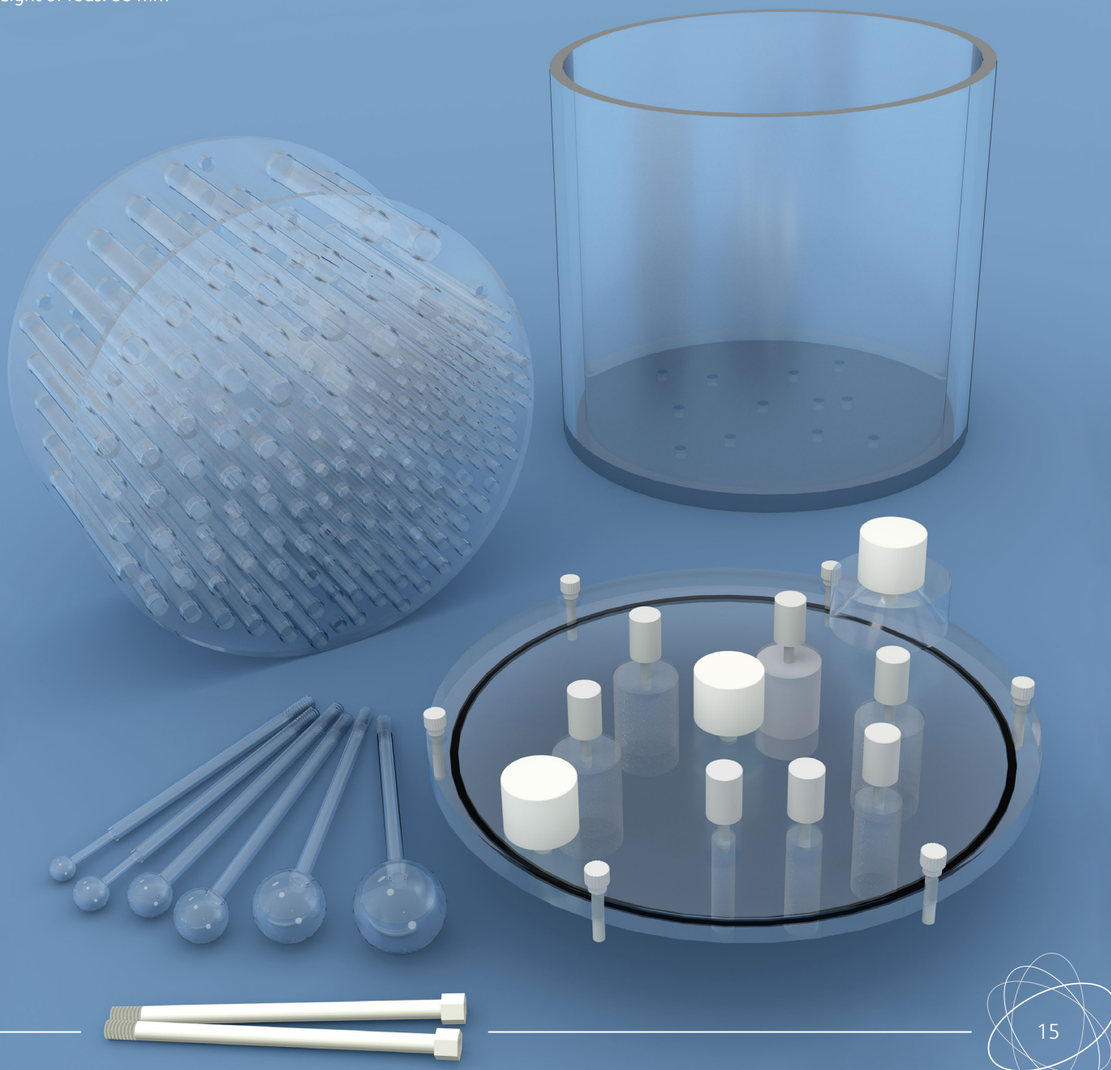
- Rod diameters: 4.8, 6.4, 7.9, 9.5, 11.1 and 12.7 mm
- Height of rods: 88 mm

Cold Spheres

- Solid sphere diameters: 9.5, 12.7 15.9, 19.1, 25.4 and 31.8 mm
- Height of the center of the spheres from the base plate: 127 mm

Optional PET Lid with Cylindrical Samples

- Refillable thin-walled cylinders, diameters: 8, 12, 16 and 25 mm
- Water filled cylinder diameter: 25 mm
- Air filled cylinder diameter: 25 mm
- PTFE solid cylinder diameter: 25 mm
- Cylinder height: 38 mm



Pro-NM Autoflood

The Pro-NM AutoFlood is dedicated for weekly inhomogeneity and sensitivity control and acquisition of correction matrices.

The Pro-NM AutoFlood corresponds to DIN 6855, Part 2 and contains a mixing system with built-in pump. Due to its special composite design, deformation of the measuring areas is avoided by permanent water contact.

- Fully automatic mixing with integrated circulation pump including air chambers for pressure compensation.
- Compact, closed system.
- Measuring areas made of glass/acrylic glass composite design.
- Optional positioning cart for different camera systems.
- Dimension of the cuvette: 545 x 630 x 80 mm
- Dimension with attachment parts: 635 x 630 x 90 mm
- Filling quantity approx. 12 litres
- Weight empty approx. 21 kg
- Operation weight approx. 31 kg
- Effective field of view: 400 x 540 mm
- Total field of view: 440 x 580 mm
- Material in measuring range: 20 mm acrylic glass/glass.
- Measuring accurarcy according to DIN: 1%
- Filling medium: distilled water.
- Low voltage (12V wall plug transformer) power supply.
- Mixing time: 4 minutes.
- Operation temperature: 15° C – 25°

Neck Phantom

The Captus® neck phantom is made of clear Lucite designed to represent a patient's neck.

Consisting of a two part insert that allows counting in a bottle or vial, as well as capsule counting, this unit is etched to show where the caliper of the thyroid probe should be placed for proper alignment.

- Allows for placement in a vertical or horizontal position.
- Meets all suggested requirements for use in counting a thyroid uptake standard source.

Pro-MRI

Phantom for comprehensive evaluation of critical imaging parameters of magnetic resonance imaging (MRI) in a time efficient manner. The phantom can be used for the measurement of absolute values for calibration purposes. However, its design is optimised for time efficient daily quality assurance too.

It can be used to measure: geometric distortion, spatial resolution, slice thickness and position, interslice Gap, T1 and T2 values, image bandwidth, low contrast detectability, image uniformity, signal-to-noise ratio (SNR), physical and electronic slice offset, point of reference, bandwidth: water-fat shift.

- Outside cylinder diameter: 220 mm (180 mm)
  Outside cylinder height: 150 mm
  Inside cylinder diameter: 204 mm (173 mm)
  Inside cylinder height: 130 mm.
- Filled with 10 mmol nickel chloride solution containing sodium chloride 75 mmol.

T1 and T2 Sample Vials

- 6 cylindrical vials ∅ 19 x 41 mm.
- Refillable from outside.
- Filled with different configurations of nickel chloride and sodium chloride solution, precise information to be found in the manual.

Resolution Insert

- Four matrices of holes, diameters: 0.8, 0.9, 1.0 and 1.1 mm.
- Spaces between the holes are equal to hole diameters.
- Two small containers with water and fat for water-fat shift evaluation.

Slice Thickness Insert

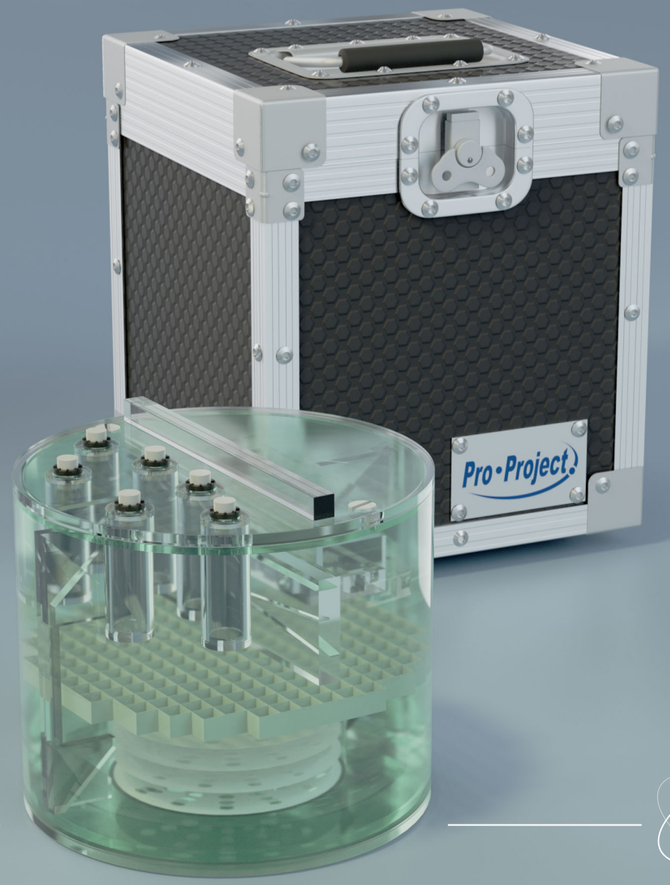
- 180 x 46 x 10 mm PMMA plate.
- 1 mm wide and 5 mm deep counter-descending slits on both sides.
- Slits form two ramps descending at 1:10.

Geometric Distortion Insert

- 10 x 10 array of squares.
- 148 mm on a side.
- 10 mm thick.

Low Contrast Insert

- 4 polycarbonate discs 0.05, 0.1, 0.15 and 0.2 mm in thickness.
- Partial volume contribution of these sheets and filling solution produce contrasts: 1.4, 2.5, 3.6 and 5.1%.
- Each disc contains 12 groups of 3 holes arranged in spokes.
- Each spoke has the same diameter.
- Diameters range from 7.0 to 1.5 mm (0.5 mm step).
- Four sets of paired 45° wedges are located on both sides of the phantom. The lower pairs are 30 x 30 mm, and the upper ones are 40 x 40 mm. The distance between intersection points of the lower and upper pairs is 90 mm.
- Optional 6 removable vials for test samples – replacing the "T1 and T2 sample vials", includes 6 additional vials (in 12 total) (09-103).
- Optional detachable 3-axis spirit level (09-104).
- Optional hard-sided carrying case (MR unsafe) (09-102).



Pro-MRI ACR Medium

ACR accredited Medium MRI phantom for comprehensive evaluation of critical imaging parameters of magnetic resonance imaging (MRI) in a time efficient manner. The phantom can be used for the measurement of absolute values for calibration purposes. However, its design is optimised for time efficient daily quality assurance too.

It can be used to measure: geometric distortion, spatial resolution, slice thickness and position, interslice Gap, image bandwidth, low contrast detectability, image uniformity, signal-to-noise ratio (SNR), physical and electronic slice offset, point of reference, bandwidth: water-fat shift.

- Outside cylinder diameter: 178 mm
  Outside cylinder height: 157 mm
  Inside cylinder diameter: 165 mm
  Inside cylinder height: 134 mm.
- The phantom is filled with 10 millimolar (mmol) nickel chloride solution containing 0.45% by weight sodium chloride.
- The outside of each phantom has the words “NOSE” and “CHIN” etched into it as an aid to orienting the phantom for scanning, as if it were a head.

Resolution Insert

- Four matrices of holes, diameters: 0.8, 0.9, 1.0 and 1.1 mm
- Spaces between the holes are equal to hole diameters.
- Two small containers with water and fat for water-fat shift evaluation.

Slice Thickness Insert

- 1 mm wide counter-descending slits on both sides.
- Slits form two ramps descending at 1:10.

Geometric Distortion Insert

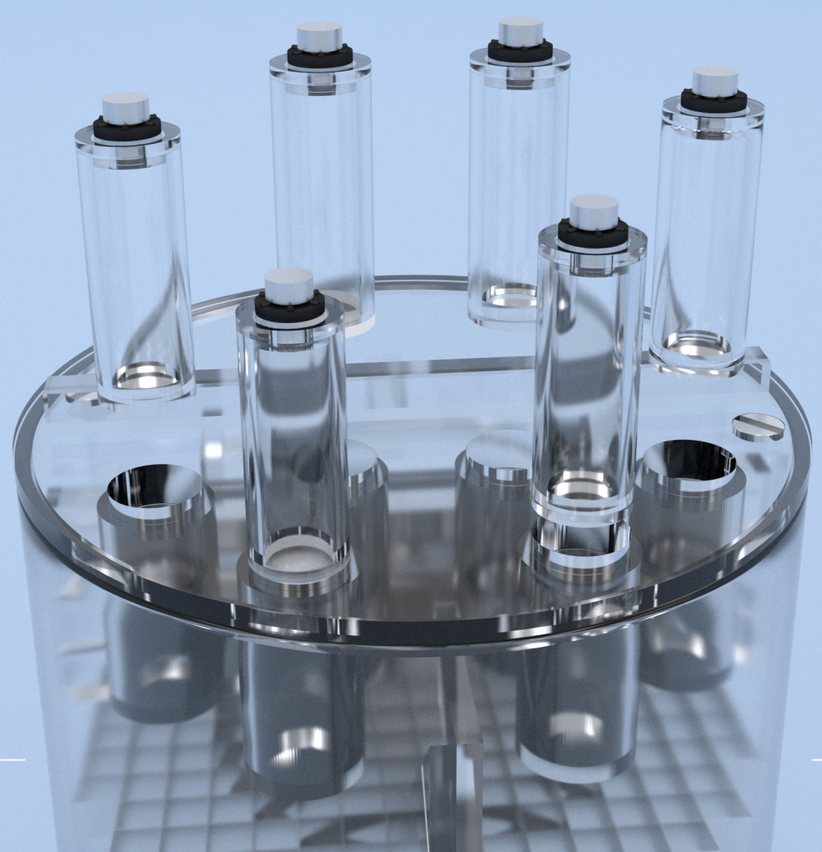
- 3 x 3 holes array, 40 mm spacing, 2 mm diameter.
- 120 mm on a side.
- 10 mm thick.

Low Contrast Insert

- Partial volume contribution of these sheets and filling solution produce contrasts: 1.4, 2.5, 3.6, and 5.1%.
- Each disc contains 10 groups of 3 holes arranged in spokes.
- Each spoke has the same diameter.
- Diameters range from 7.0 to 1.5 mm.

Slice Position Accuracy

- One set of paired 45° wedges. The distance between the intersection of the wedges is 100 mm.



Pro-DigiMAM ACR

ACR accredited Full Field phantom designed to test the performance of a digital mammographic system by evaluating the system’s ability to image small structures similar to those found clinically: micro-calcifications, fibrous structures in ducts and tumor-like masses.

- Complies with IEC 61223-3-2 and ACR Mammography Accreditation Program Requirements.
- Accredited by ACR.
- CE certified.
- Simulates 42 mm compressed breast of average glandular / adipose composition (50% / 50%).
- Manual provides detailed guidelines for carrying out each test, results assessment and registration.
- Dimensions: 311.2 x 190.5 x 41.3 mm.

Wax Insert

- Nylon fibrils diameters: 0.89, 0.75, 0.61, 0.54, 0.40 and 0.30 mm.
- Microcalcifications: 0.32, 0.28, 0.23, 0.20, 0.17 and 0.14 mm specks.
- Tumor-like masses: 1.00, 0.75, 0.50, 0.38, 0.25 and 0.20 mm thick.

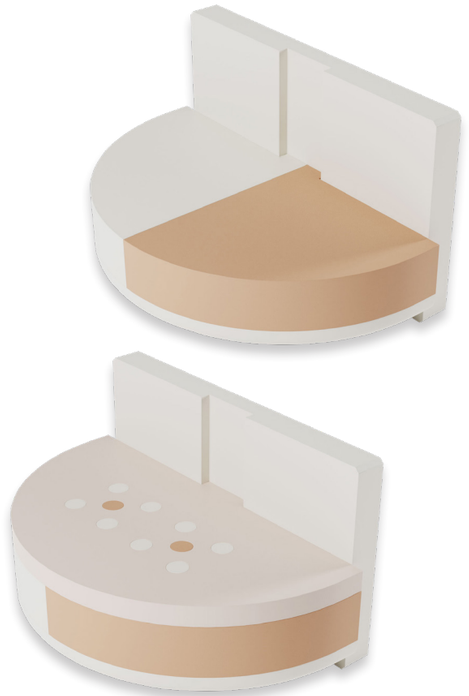
Pro-MAM CESM

The Pro-MAM CESM phantom is used to assess image quality in spectral (dual energy) mammography systems with contrast enhancement.

The basic element of the phantom is a 10 mm plate made of breast material in a 50/50 ratio of glandular and fat tissue. There are two groups of iodine-doped objects with a concentration of 0.2, 0.5, 1.0, and 2.0 mg / cm^3. These concentrations cover the clinical range of contrast agent concentrations. Additionally, in each group, there is an object simulating a solid lesion with a density corresponding to the glandular tissue.

Below the board, there is a module symmetrically divided into 2 parts. One of them is made of a material equivalent to 100% glandular tissue, and the other is 100% adipose tissue. Thanks to this, it is possible to assess the visibility of contrasting objects in a wide range of background densities.

- CESM routine quality control.
- Assessment of the quality of subtracted images.
- Contains iodine concentrations in a clinically relevant range.
- Represents types of breasts with the majority of glandular tissue or fat tissue.
- Object visibility assessment is similar to clinical conditions.



Pro-MAM Accrediation

Tests the performance of a mammographic system and its ability to image small structures similar to those found clinically: calcifications, fibrous calcifications in ducts and tumor masses.

- Dimensions: 101.5 x 108.0 x 44.0 mm.
- Simulates 42 mm compressed breast of average glandular/adipose composition.
- Total PMMA thickness: 36.75 mm.

Wax insert

- Thickness: 7.25 mm.
- Nylon fibrils diameters: 1.56, 1.12, 0.89, 0.75, 0.54 and 0.40 mm.
- Microcalcifications: 0.54, 0.40, 0.32, 0.24 and 0.16 mm Al_2O_3 specks.
- Tumor-like masses: 2.00, l.00, 0.75, 0.50 and 0.25 mm thick.
- 4 mm thick PMMA contrast disc.

Pro-DigiMAM

This versatile phantom can be used for monitoring technical parameters of digital mammography imaging systems.

It can be used to test: optical density / luminance in the reference point, spatial resolution, threshold contrast visibility, contrast, effective radiation field, automatic exposure timer, CNR, SNR, NPS, MTF, ghosting, filaments, artefacts evaluation, geometric distortion check, contrast details.

- Dimensions: 240 x 180 mm or 300 x 240 mm
- Modular construction – different modules can be firmly placed on the main module.
- Optional carrying case.

Main Module

Set of PMMA attenuation plates: 6 x 10 mm thick and 2x 5 mm thick; one plate contains marking of the reference point.

CNR Module

10 mm thick module containing a 20 x 20 x 0.2 mm aluminium filter, located 6 cm from the chest side.

Contrast Detail Module

20 mm thick module containing gold (99.99%) discs organised in a 7 x 14 matrix (diameter x thickness).

Discs have the following diameters: 0.1, 0.25, 0.5, 0.75, 1.0, 1.5, 2.0 mm and 14 thicknesses ranging from 0.03 to 2.0 µm.

Thickness accuracy: 1 nm (0.001 µm), diameter accuracy 0.001 mm (1 µm).

Ghosting Module

10 mm thick module containing a 30 x 30 x 0.1 mm luminium filter for a ghost test.

Resolution and Geometry Module

10 mm thick module containing:

- Pattern for the line pair resolution evaluation (from 1,5 to 20,0 LP/mm) rotated 45°
- 8 low contrast objects (ø5.5 mm and depth from 0.1 mm to 0.45 mm)
- 3 objects of a different absorption level pattern for evaluation of the effective radiation field.

Pro-DigiMAM MTF Module

10 mm thick module containing a straight stainless steel edge accurate to ±2 µm at a 3° angle.

Artefact Evaluation Module

10 mm thick module containing a mesh for artefacts evaluation.

Filaments Module

10 mm thick module containing 6 groups of multi-directional filaments 0.40 mm to 0.20 mm in diameter.

Dynamic Range Module

10 mm thick module containing Al step wedge with 14 steps from 0.0 to 5.2 mm.

Pro-DigiMAM Geometry Distortion Module (Scales)

10 mm thick module containing a grid with scales.

Pro-DigiMAM Geometry Distortion Module (Mesh)

10 mm thick module containing a wire mesh of horizontal, vertical and diagonal lines (45°).

ACR Accreditation Module

14 mm thick module containing a wax insert as in Pro-MAM Accreditation (when used with 3 x10 mm plates from main module simulates 42 mm compressed breast of average glandular/adipose composition).

Full Field ACR Accreditation Module

14 mm thick module containing a wax insert as in Pro-MAM Accreditation FF (when used with 3 x 10 mm plates from main module simulates 42 mm compressed breast of average glandular/adipose composition).

Noise Evaluation Module

2 mm thick aluminium plate 200 x 200 mm

Spacers Sets

180 x 15 mm or 240 x 15 mm PMMA plates:

4 pieces 10 mm thick,

2 pieces 8 mm thick,

2 pieces 5 mm thick,

2 pieces 2 mm thick

Mammography Phantoms

Compensation Module

Pro-DigiMAM Compensation module set of 10 PMMA plates 40 x 20 x 2 mm

Tomosynthesis Dedicated Modules

NPS attenuator.

Pro-DigiMAM NPS Attenuator

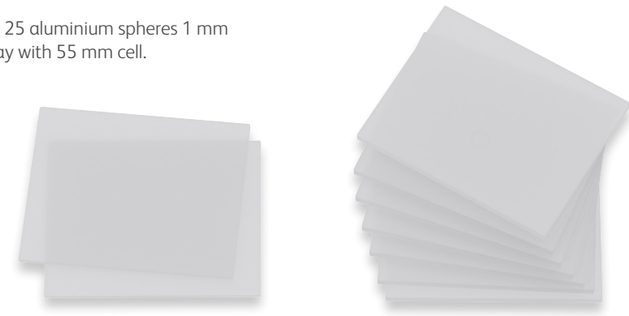
2 mm thick high purity aluminium filter.

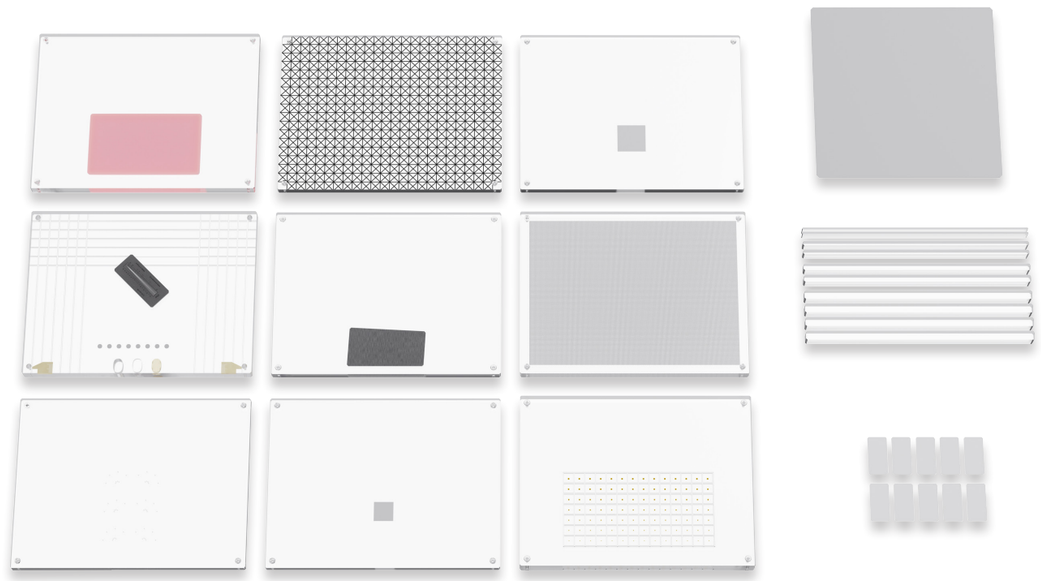
Pro-DigiMAM AMTF Module

10 mm thick module containing a stainless steel square (50 x 50 mm) with straight edges accurate to ±2 µm rotated 3°

Pro-DigiMAM Z-resolution Module

5 mm thick module containing 25 aluminium spheres 1 mm in diameter arranged in an array with 55 mm cell.





Pro-DigiMAM Wire MTF Module

15 mm module containing 25 µm tungsten wire at a 3° angle 60 mm from the chest wall.

Pro-DigiMAM Proactive Steel Plate

2 mm stainless steel plate 240 x 300 mm covering the whole image receptor.

Pro-DigiMAM Spacers Set

Two 240 x 20 x 30 mm spacers for appropriate positioning of test modules.

Pro-CT MK II

Ideal for carrying out acceptance and constancy tests of computed tomography systems according to IEC 61223-3-5 and the AAPM guidelines. This phantom consists of several test modules placed inside a cylindrical container that can be mounted either directly on a holder of the CT table or on an adjustable stand. It allows accurate alignment for measurements on and off the table. Markings on the phantom and leveling aids provide further facilitation of the positioning process.

The phantom can be used for the following tests: geometric distortion, CT number (HU) measurement, noise / uniformity, artefacts, MTF, SSP, LSF, PSF, CNR, spatial resolution, spatial resolution in Z dimension, contrast resolution, low contrast resolution, slice profile, alignment, linearity, beamwidth.

- Main module contains a PMMA section with an array of holes 2 mm in diameter, 10 mm deep, and placed at 10 mm intervals.
- Outside diameter: 220 mm, length: 250 mm.
- Optional external beam hardening rings.
- Carrying case.

Low Contrast Module

The Pro-CT MK II low contrast module is made of PMMA.

- Diameter: 200 mm, thickness: 30 mm.
- Contains three groups of low-contrast objects: in each group, there are rods of the same density, 20 mm in height and with a diameter ranging from 1 to 15 mm. Contrast difference between groups and surrounding material is 0.3, 0.6 and 1%.
- Optional subslice targets having a nominal 1.0% contrast and z-axis lengths of 3, 5, and 7 mm. For each of these lengths, there are objects of 2, 3, 5, 7 and 9 mm in diameter (04-411).

Geometry Module

Pro-CT MK II Geometry module.

- Diameter: 200 mm, thickness: 30 mm.
- Contains two pairs of steel wire ramps whose slope angle tangent is equal to 0.5.
- Middles of ramps intersect on the same plane allowing very precise evaluation of the slice location.
- Contains four ∅ 5 mm rods and four ∅ 3 mm rods from the air in the vertices of the regular octagon close to the outer perimeter of the phantom for evaluating symmetry and circular geometry.
- Optional nine spheres to evaluate the scanner's imaging of subslice spherical volumes, diameters: 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0 and 9.0 mm (04-413).

Sensitometry Module

Pro-CT MK II Sensitometric / contrast module.

- Diameter: 200 mm, thickness: 30 mm.
- Contains 9 sensitometric samples shaped like rods (∅ 25 mm): PTFE, LDPE, POM-C, ABS, PA-6, PET, air, plastic water equivalent and PMMA – modules body.

Resolution Module

Pro-CT MK II Spatial / high contrast module.

- Diameter: 200 mm, thickness: 30 mm.
- Contains 13 concentrically placed high contrast elements for spatial resolution evaluation from 1 to 13 LP/cm.
- Two tungsten carbide beads ∅ 0.18 mm and ∅ 0.28 mm for MTF and SSP calculation.
- Linear Spread Function (LSF) PTFE / PMMA interface.
- Point Spread Function (PSF) – 0.25 mm stainless steel wire in air.
- optional, additional concentrically placed high contrast elements for spatial resolution evaluation from 14 to 30 LP/cm (04-414).

Homogeneous Module

Pro-CT MK II Water fillable module.

- Diameter: 200 mm, thickness: 35 mm.
- Can be filled with water.
- Optional module made of Pro-Water water-equivalent (04-421).

Pro-CT MK II Pro-water module.

- Diameter: 200 mm, thickness: 35 mm.
- Mimics true water within 1% accuracy.

Optional Electron Density Module

Pro-CT MK II electron density module.

- Diameter: 200 mm, thickness: 30 mm.
- Contains samples of 10 different rod-shaped materials (∅ 30 mm x 27.5 mm) with the known physical and electron density corresponding to the following tissues: lungs (inhale), lungs (exhale), breasts (50/50), dense bone, bone marrow, liver, muscles, adipose tissue; additionally, a sample with water and a optional titanium rod.

Pro-CT MINI

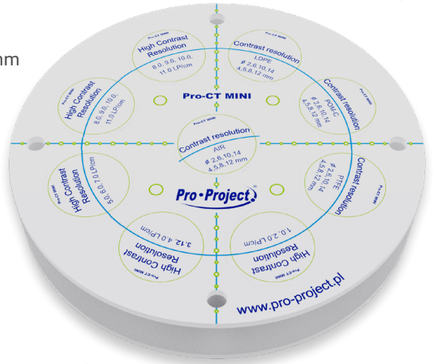
A compact CT image quality testing solution. When connected with Pro-CT Dose it may be used for carrying out acceptance and constancy tests of computed tomography systems according to IEC 61223-3-5 and the AAPM guidelines.

This phantom consists of a module 16 cm in diameter with positioning aids and recesses for test modules.

When used Pro-CT Dose the phantom can be used to do the following tests: geometric distortion, CT number (HU) measurement, noise / uniformity, artefacts, MTF, spatial resolution, contrast resolution, low contrast resolution, slice profile, alignment, linearity, beamwidth.

Main Module

- Diameter: 160 mm, thickness: 30 mm
- 9 recesses for test inserts allow customised placement of test objects in space.
- Markings for easy and accurate positioning in the CT scanner.
- Set of holes on a given depth for testing geometry, distortions and slice position.
- Screws and extra plugs for mounting the module on any Pro-CT Dose Phantom (04-319).



Standard Test Inserts

- 5 contrast resolution inserts containing rods made from different materials: LDPE, PTFE, POM-C, air, plastic water equivalent. Diameters of rods in each insert are: 2, 4, 6, 8, 10, 12, 14 mm.
- High contrast resolution inserts containing 11 aluminium test elements for spatial resolution evaluation from 1 to 11 LP/cm.
- 2 geometry modules containing two pairs of aluminium wire ramps whose slope angle tangent is equal to 0.5.
- Linear Spread Function (LSF) insert – PTFE / PMMA interface.
- Point Spread Function (PSF) insert – 0.25 mm tungsten steel wire in air.

Optional Inserts

- 3 low contrast inserts containing rods with a diameter: 2, 4, 5, 6, 8, 10, 12, 14 mm. The contrast difference between the rods and the surrounding material are 0.3, 0.6 and 1%.
- 3 high contrast resolution inserts containing 19 aluminium test elements for spatial resolution evaluation from 12 to 30 LP/cm.

CT Scanner Dose Measurement Phantom

This phantom set consists of one 16 cm head phantom with 5 holes, and a 32 cm body annulus with 4 holes provided in a hard case with built-in trolley.

Specifications	
Material	Acrylic plastic (PMMA)
Thickness	15 cm
Diameter	16 cm (head phantom) 32 cm (body annulus)
Hole Arrangement (Head Phantom)	One in centre and four around periphery 90° apart 1 cm from the edge
Hole Diameter	13 mm
Plug Length	15 cm
Plug Diameter	12.5 mm
Weight	7 kg (head phantom) 9 kg (body annulus)

Dental Phantoms

Pro-Dent All Pro

This is a versatile set of phantoms and software for carrying out constancy and acceptance tests of intra-oral, OPG, CBCT, DVT and other 3D imaging devices. Thanks to the Diagnomatic subscription, all tests can be quickly and effortlessly automatically analysed online.

The standard kit configuration contains:

- Pro-Dent set All (01-203).
- Pro-Dent CT mk II (01-501).
- Pro-Slit (05-101).
- Pro-Stand RF (05-102).
- Pro-Stand ALIGN (05-104).
- Diagnomatic PRO annual subscription.
- Carrying cases with dedicated foam inlay.

The kit can be used to measure:

- Dose reproducibility.
- Development process stability.
- Alignment and beam geometry.
- Image geometry.
- Pixel (matrix) size.
- Artefacts, noise.
- Beam hardening artefacts.
- Homogeneity.
- Linearity.
- Contrast.
- High-contrast resolution in XY and Z plane.
- Low-contrast resolution (contrast sensitivity).
- Line Spread Function.
- Point Spread Function.
- MTF.
- Contrast To Noise for different materials.
- Focal spot size.

Pro-Dent

The Pro-Dent set is a universal set of phantoms for carrying out constancy and acceptance tests of conventional and digital dental X-ray units (intra-oral, panoramic and cephalometric).

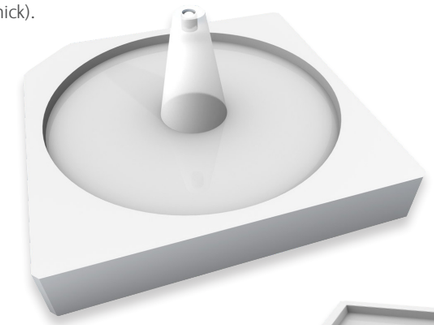
This is not an all-in-one device where results of tests blur each other out. This is the only solution on the market that makes it possible to measure the X-ray beam collimation with a dental film or a digital detector.

With the Pro-Dent set you can do the following tests: dose reproducibility, development process stability, perpendicular X-ray beam (range 0° ÷ 1.5°), limitation and alignment of the X-Ray beam (including beam radius measurement), spatial / line pair resolution (perpendicular, parallel and rotated 45° to anode-cathode line), low contrast resolution.

Pro-Dent Alpha Phantom

3 step wedge (first step made of copper foil 0.3 mm thick, the next ones are made of polytetrafluoroethylene 8 mm and 16 mm thick).

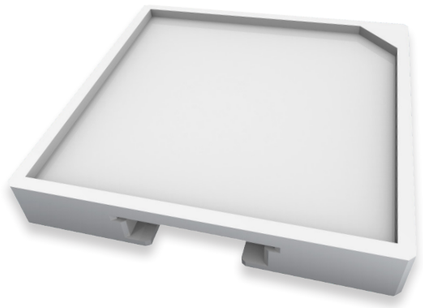
- Cover made of PMMA.



Pro-Dent Beta Phantom (optional)

A square plastic device with a circle engraved in the middle, one bevelled edge, and a transparent plastic cone in the middle with a small metal sphere embedded on top.

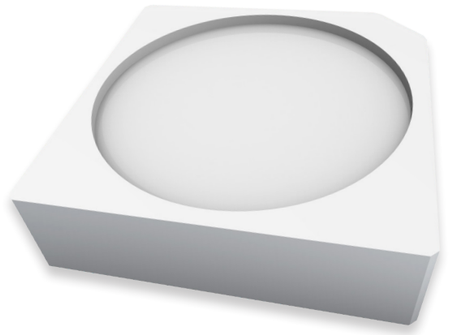
- Cone for perpendicular X-Ray beam control in the range of 0° ÷ 1.5°.
- Pattern for beam radius estimation.
- Cover made of PMMA.



Pro-Dent Gamma Phantom

A square device assembled from four layers made of plastic and metal, with an engraved circle on top and two bevelled edges.

- Pattern for line pair resolution evaluation (from 4 to 8 LP/mm).
- Optional second pattern for line pair resolution evaluation (from 1.6 to 3 LP/mm) – OPG units.
- Four holes in 0.5 mm Al foil for low contrast resolution tests.
- Additional 6 mm aluminium filter.
- Cover made of PMMA.



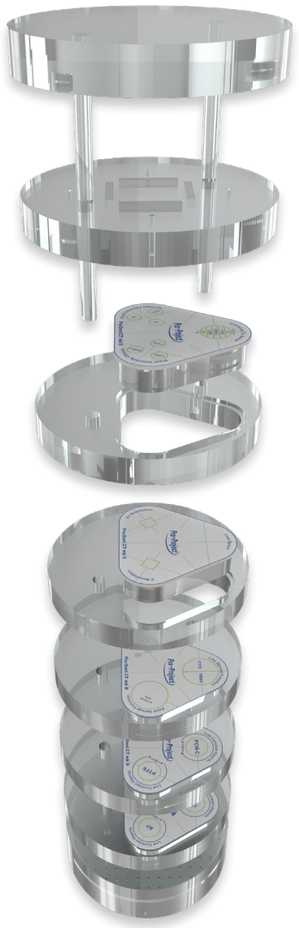
Accessories

- 0.8 mm copper filter – patient's head equivalent.
- Positioning stand with a space for an analogue film or a digital detector.
- Band for firm, perpendicular attachment of the phantom to the X-Ray unit's beam applicator.
- Rings for centering phantoms on the X-Ray unit's beam applicator.
- Elegant and convenient box for storing phantoms.

Pro-Dent 161

The Pro-Dent 161 phantom offers acceptance and constancy testing of the 3-D function of dental Cone-Beam CT, Dental Volume Tomography (DVT) and 3D imaging devices according to DIN 6868-161 and QS-RL.

- 20 mm thick main module containing:
  – test object containing equivalents of air, soft tissue and bone
  – positioning markers
  – bubble level
- 20 mm, 50 mm and 60 mm thick PMMA modules with positioning aids.
- Test stand with a table for placing the phantom in the test position.
- Convenient, portable case for storing and transporting the phantom.



Pro-Dent CT Mk II

The new Pro-Dent CT Mk II phantom is a versatile quality control tool of dental Cone-Beam CT, Dental Volume Tomography (DVT) and other 3D imaging devices according to the Radiation Protection Report no 172 by SEDENTEXCT.

The phantom consists of a main PMMA cylinder that houses modules with different test objects. Thanks to this design, you can perform tests with devices with a small FOV at different positions in the 160 mm phantom.

- 5 layer modules section.
- Test stand with spirit level for accurate placing of the phantom in the test position.
- Folding base for test stand positioning on the X-ray unit's chair.
- Convenient, portable case for storing and transporting the phantom.
- Optional additional homogeneity disc.

Pro-Dent CT MINI

Pro-Dent CT MINI phantom is a versatile quality control tool of dental Cone-Beam CT, Dental Volume Tomography (DVT). and other 3D imaging devices with even the smallest FOV (Field Of View).

The phantom consists of a main PMMA cylinder that houses modules with different test objects allowing the performance of most important imaging quality tests including: image geometry, slice geometry, pixel (matrix) size, artefacts, noise, homogeneity, linearity, contrast, high-contrast resolution, low-contrast resolution (contrast sensitivity).

Main Cylinder

A plastic jar which contains markings for easy positioning in the dental unit.

- Geometric distortion section – an array of 2.0 mm diameter, 3.0 mm long holes uniformly pitched at 10.0 mm intervals
- Diameter: 110 mm, length: 130 mm
- Made of PMMA (1.19 g/cm^3)

Noise / Uniformity Module

A 20 mm thick plastic circle.

Linearity Module

A plastic circle with five round objects inside.

- Contains 15 mm rods made of PTFE, polyamide, LDPE air and water emulating epoxy embedded PMMA – pixel intensity / HU values samples.

High Contrast Resolution Module

A plastic circle similar to a slice of apple.

- Contains 7 objects for resolution evaluation: 10, 11, 12, 13, 14, 15, 16 LP/cm
- 0.3 mm bead for Modular Transfer Function (MTF) calculation.

Low Contrast Section

A plastic circle with seven circular descending objects arranged concentrically.

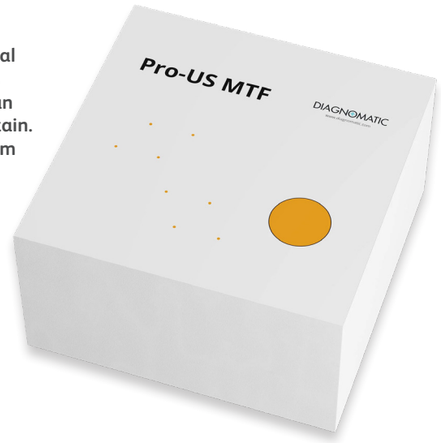
- Containing rods of a different diameter: 2, 3, 4, 6, 8, 10, 12 mm, filled with a substance whose density is 3% different from the body of the module.

Slice Geometry Module

A plastic circle with three small holes in the middle creates a triangle, and four bigger holes create a square with two straight metal wires.

- 4 air rods, 3 mm in diameter, placed in vertices of the 30 mm square.
- Two aluminium wire ramps.

Pro-US MTF



This tissue-mimicking phantom is used in routine technical quality assurance (TQA). The PVA based material mimics the sound velocity and acoustic attenuation of the human tissue, is nontoxic, durable and easy to handle and maintain. Comparable and reproducible results can be achieved from a single image, making this a perfect daily QA tool.

To determine the spatial resolution of phantom images, a modulation transfer function (MTF) is calculated by the Diagnomatic software using radial MTF algorithm. In addition radial MTF test object the phantom also contains structures for geometry assessment.

- Overall dimensions: 110 x 110 x 60 mm.
- Top and bottom cover made of PCV.
- Test insert dimensions: 110 x 110 x 50 mm.

Test Insert

- 20 mm in diameter round object (20 mm and 10 mm from phantom faces) for radial MTF.
- 2 groups of four round rods (1 mm in diameter) with 15 mm horizontal and vertical spacing for geometry assessment.
- Tissue mimicking material is based on Polyvinyl alcohol (PVA), a synthetic polymer.

Pro-US Uniform

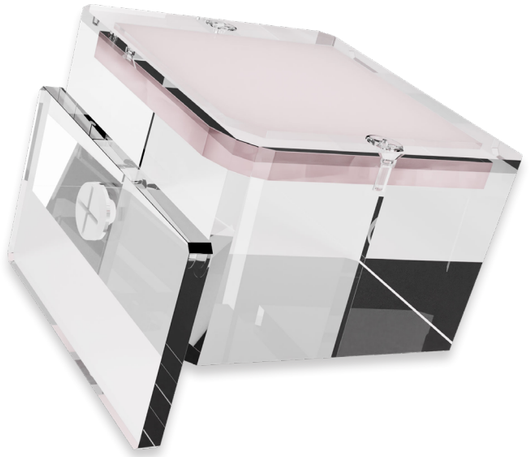
This homogenous, tissue-mimicking phantom is used in routine technical quality assurance (TQA). The PVA based material mimics the sound velocity and acoustic attenuation of the human tissue, is nontoxic, durable and easy to handle and maintain. Comparable and reproducible results can be achieved from a single image, making this a perfect daily QA tool.

- Overall dimensions: 110 x 110 x 60 mm.
- Top and bottom cover made of PCV.
- Test insert dimensions: 110 x 110 x 50 mm.
- Test insert is homogenous block of tissue mimicking material based on Polyvinyl alcohol (PVA), a synthetic polymer.

Pro-MAM Biopsy

This phantom is designed to provide a fast and easy way to test image quality on digital biopsy mammography units and qualify for ACR accreditation.

The phantom contains test objects that are similar to those found in the Mammographic Accreditation Phantom specified by the American College of Radiology (ACR). The extended top edge of the phantom allows ease of positioning on recumbent biopsy units. Its small size allows the phantom to be imaged in its entirety in a single exposure when used with a digital biopsy unit. Enables the user to determine if the images are similar to, or better than screen-film. Can be used in both an upright and prone machine.



- Dimensions: 80 x 70 x 46 mm.
- Simulates 42 mm compressed breast of average glandular / adipose composition.
- Test elements contain:
  - nylon fibrils diameters (fibers): 0.93, 0.74, 0.54 and 0.32 mm.
  - Al_2O_3 microcalcifications (specs): 0.54, 0.32, 0.24 and 0.2 mm.
  - tumor-like masses: 1.00, 0.75, 0.50 and 0.25 mm thick.
- Includes a rotating support plate.
- Optional carrying case, radiation field, automatic exposure timer, CNR, SNR, NPS, M.

Gonad ‘T’ Shields and Thyroid ‘D’ Shields

Lead shielding encased in a moulded grey plastic cover, these ‘T’ shields are supplied as a set of three, one in each size (small, medium, large).

Easy to adjust and comfortable to wear, the Thyroid ‘D’ Shields have a Velcro collar fastening and are available in a choice of colours.

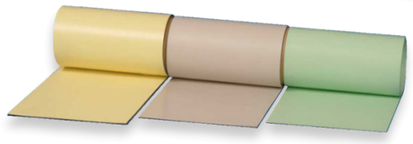
Lead Rubber Gloves

A range of lead rubber X-ray gloves which offer good flexibility and are easy to clean.

Lead Protective Glasses

Offering a combination of practicality and protection these wraparound lead protective glasses feature side protection and are supplied complete with ties.

Lead Vinyl Sheeting



PVC coated lead vinyl sheeting with a wipe clean finish on both sides, These sheets are easy to cut and shape with scissors or a knife. They are 60 cm wide and only supplied in full metre lengths.

Lead Protective Aprons

Double sided lead aprons available in a variety of sizes and colours featuring a single shoulder clip, with a one piece Velcro belt.

All aprons are fitted with generous shoulder pads for extra comfort and are available in petite, small, medium, large, and in a variety of lengths.

The range includes skirts and tabards.

Standard Lead Vinyl Option

Guaranteed protection against most forms of ionising radiation.

Lead Free/Low Weight Option

Latest light weight formulation with advantages of disposability.

Personal Electronic Dosimeter (PED)

Ideal for users who are not specially trained to measure radiation exposure, the PED family have been specially designed to be easy to use and understand. Encased in weather, shock and drop-proof housings each PED features a smooth clean design and simple to use DoseVision™ software.

- Detects X-rays and gamma rays from 48 keV - 3 MeV.
- One button operation.
- Easy to read large Amoled display screen displaying dose rate, accumulated dose and animated silhouette indicating dose received.
- Multiple languages.
- Multiple users.
- Rated water resistant as per IP67.

PED2-IS

PED2-IS

Built on over a decade of user experience with the original model, PED2-IS is a rugged, lightweight and easy-to-use personal electronic dosimeter that effectively monitors, measures and manages radiation exposure. It is an intrinsically safe certified device for use in potentially explosive environments, such as the oil and gas industries. A new Graphical User Interface (GUI) features intuitive visual elements, simple menus, and a single-button navigation for effortless operation.

PED-Blue

This is the non-intrinsically safe version of the PED-IS. Lighter, it retains the same high quality design and features a direct micro USB connection.

PED-ER

The PED-ER’s extended dose rate range of 1 Sv/h (100 R/h) provides perfect radiation dosimetry for nuclear medicine environments.

PED-Blue / PED-ER

PED-ER

Service and Support

Southern Scientific has a team of fully qualified service engineers, who support customers spanning the length and breadth of the UK. We can provide factory or on-site service as required, based on single visits, planned maintenance or full support under contract. We maintain a high level of spare parts, ensuring lifetime support capability.

Our systems group can offer its service for the larger installed equipment, from initial planning to installation, completion and training. We can provide expert knowledge and experience, gained through involvement in a number of large-scale projects throughout the years.

ISO Certified

Southern Scientific Ltd is certified to ISO 9001 and ISO 13485 representing the high level of quality assurance and management that we provide at every stage of the supply process, whether a product is distributed on behalf of our trusted manufacturers or constructed in our UK workshop. This accreditation means that our customers can place an order knowing that the delivered product will be suitable for its intended use, fully compliant with EU legislation and in full working order.

All our products are CE marked.

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