Leeds Test Objects

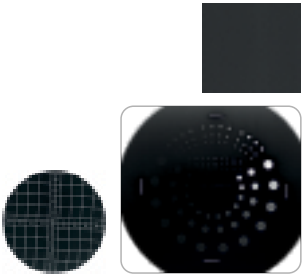
medical imaging phantoms

PRODUCT BROCHURE

medibim

www.leedstestobjects.com

CR DDR Set



A set of test objects designed to be used quickly and easily on an annual / commissioning basis to provide an ongoing check of imaging performance, particularly those aspects which are most liable to deterioration.

Set includes:

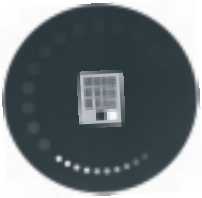
- TO 20 threshold contrast test object
- Resolution test object 3.4 - 10.0 LP/mm
- TO M1 geometry test object
- TO MS4 mesh test object
- Small lead block, Steel ruler, Tape measure and 1.5 mm Copper filter

Conforms to standard Kcare CR/DR Protocol

See also:

AutoPIA Software

TOR CDR



A routine QA test phantom for radiography systems. TOR CDR is used to provide an ongoing check of imaging performance, particularly those aspects which are most liable to deterioration. Used for conventional, computed and digital radiography.

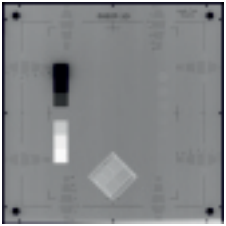
Measure:

- Sensitometric measurements
- Resolution limit (0.5 to 14.3 LP/mm)
- Low-contrast large-detail detectability
- High-contrast small-detail detectability

See also:

AutoPIA Software

PIX-13



A routine QA test phantom for radiography systems. PIX-13 is used to provide an ongoing check of imaging performance, particularly those aspects which are most liable to deterioration. PIX-13 should be used with either PMMA/Cu or Al attenuator plates (available separately).

Measure:

- Dynamic range
(7 different thickness steps Cu)
- Resolution limit
(0.6 to 5.0 LP/mm)
- Low-contrast large-detail detectability
(6 details, 15mm diameter)
- X-ray to light field alignment markers

Conforms to standard DIN 6868-13

See also:

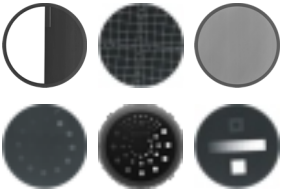
AutoPIA Software

TO ANSI

Leeds Test Objects' Patient-Equivalent phatom is designed according to AAPM report 31, and is to be used when checking the image quality performance of general radiography systems to these standards.

Conforms to standard
AAPM 31

SFS Set



A set of test objects designed to be used quickly and easily on an annual / commissioning basis to provide an ongoing check of imaging performance, particularly those aspects which are most liable to deterioration. An ongoing record of these numbers will reveal any trend towards deterioration in imaging performance.

Set includes:

- TO 10 threshold contrast test object
- TO N3 contrast test object
- TO GS2 grey scale test object
- TO E1 edge test object
- TO M1 geometry test object
- TO MS1, TO MS3, TO MS4 mesh test objects,
- 1.0 mm Copper filter x 1, 0.5 mm Copper filter x 2
- Resolution test pattern (0.5 to 5.0 LP/mm)
- Video cable and adaptors

See also:

AutoPIA Software

TOR 18FG

A routine QA test phantom for fluoroscopy systems. TOR18FG is used to provide an ongoing check of imaging performance, particularly those aspects which are most liable to deterioration.

Measure:

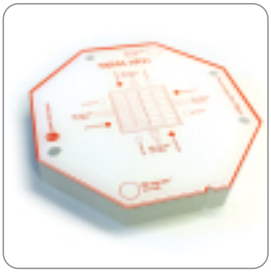
- Limiting spatial resolution (0.5 to 5.0 LP/mm)
- Grey Scale
- Low-contrast detectability
- Circular Geometry (Pb Circle)

A small F.O.V. phantom is available upon request, containing the same features.

See also:

AutoPIA & Radia Software

TO XR21



A phantom designed to allow the user to check image quality in accordance with the NEMA XR21 standard. This phantom is manufactured from PMMA and enables various QA checks.

The modular stacking design of the plates allows variation of phantom thickness in steps of 25mm, up to a total of 300mm, simulating a range of patient sizes.

Measure:

- Spatial resolution
- Contrast (iodine) resolution
- Radiation field size
- Beam alignment
- Working thickness range
- X-ray to light field alignment
- Dose (dose meter not supplied)

Conforms to standards:
NEMA XR21

TO CDRH

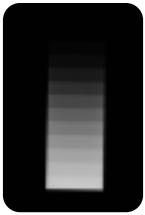
The TO CDRH Phantom enables quality assurance testing of Radiography / Fluoroscopy systems.

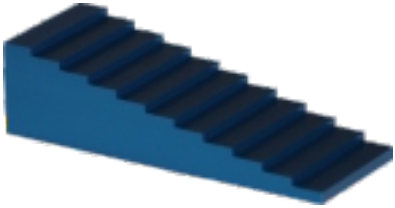
This phantom is suited to both commissioning and routine QA checks. The set includes Copper, Aluminium and Lead filters.

Measure:

- Low-contrast resolution (Aluminium disc with 8 contrast discs)
- High-contrast resolution (Copper mesh targets from 12 – 80 lines per inch)
- Attachment point for dose measurements (dose meter not supplied)

STEPWEDGE-11AL



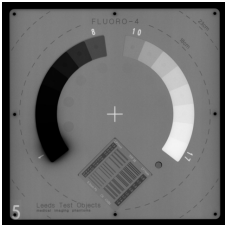


The Leeds Test Objects fluoroscopy step wedge is manufactured from Aluminium and comprises 11 steps.

Details:

Material: Aluminium
Overall dimensions: 132 x 50 x 35mm
Steps 12mm long x 50mm wide
Step 1: 5mm high
Other Steps: 3mm high

FLUORO-4



A routine QA test phantom for fluoroscopy systems. FLUORO-4 is used to provide an ongoing check of imaging performance, particularly those aspects which are most liable to deterioration. FLUORO-4 should be used with either PMMA/Cu or Al attenuator plates (available separately).

Measure:

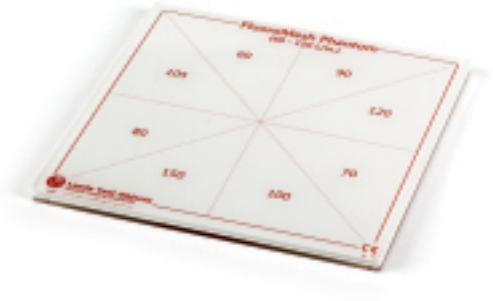
- Limiting spatial resolution (0.6 to 5.0 LP/mm)
- Grey Scale
- Low-contrast detectability (8 details, 10mm diameter)
- Circular Geometry

Fluoro-4 is also available as 300 x 300mm (**Fluoro-4-L**)

Conforms to standard
DIN 6868-4 (Fluoro-4)
DIN 6868-150 (Fluoro-4-L)

See also:
Attenuators

FluoroMesh



A routine test object designed to provide an ongoing check of the resolution of fluoroscopy systems. Image quality is measured simply by counting the number of mesh patterns resolved in the image.

Available in three resolution ranges:

FLUOROMESH 16-60
Contains 8x mesh wedges with a range of 16 to 60 lines/inch

FLUOROMESH 30-100
Contains 8x mesh wedges with a range of 30 to 100 lines/inch

FLUOROMESH 60-150
Contains 8x mesh wedges with a range of 60 to 150 lines/inch

Conforms to
AAPM Report #4

TORMAM

This test object is supplementary to TOR MAS or MAX and provides a more "natural" image which may be preferred by radiographers and radiologists.

One half contains a range of filaments, micro-particles and low-contrast details, representing pathological features in the breast. These are sensitive to the mammographic grey-scale, noise and unsharpness, and can be used to obtain an image-quality "score". The other half simulates the appearance of breast tissue and contains micro-calcification in addition to fibrous and nodular details.

Contains features:

- 6 groups of multi-directional filaments
- 6 groups of micro-calcifications
- 6 groups of 3, low contrast details groups

Conforms to NHSBSP 0604

See also:

AutoPIA Software

TORMAS/MAX

Test objects designed to be used quickly and easily on a routine basis to provide an ongoing check of imaging performance, particularly those aspects which are most liable to deterioration.

Measure:

- Ten-step grey-scale plus two points for Sensitometric measurements
- Limiting Spatial Resolution (x2 in TOR MAX)
- Low-contrast large-detail detectability
- High-contrast small-detail detectability
- Irregular-shaped particles on a step-wedge background
- Low Contrast Resolution Pattern

See also:

AutoPIA Software

PIXMAM 300x240

PIXMAM is a digital mammography image quality phantom comprising a stack of finely toleranced PMMA plates.

Measure:

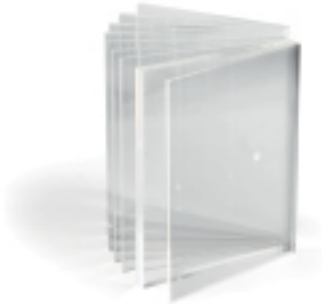
- AEC checks
- Detector homogeneity
- SNR
- CNR

PIXMAM is also available as a series of semi-circular plates with a diameter of 250mm (PIXMAM 250d).

Meets the requirements of standards:
NHSBSP pub 604-3 :2009
NHSBSP pub 702-1 :2007
EUREF 4th edition of the European Guidelines for Quality Assurance in Breast Cancer Screening and Diagnosis

See also:
TORMAM

PIXMAM-3D



PIXMAM-3D is a digital mammography image quality phantom comprising a stack of finely toleranced PMMA plates, some of which contain embedded test details.

Measure:

- AEC checks
- Detector homogeneity
- SNR
- CNR
- Image resolution
- Z-resolution test

This phantom has been designed according to the EUREF Protocol for the Quality Control of the Physical and Technical Aspects of Digital Breast Tomosynthesis Systems

TOMO-IQ

TOMO-IQ is a set of image quality phantoms for testing of tomosynthesis mammography systems.

Set Includes:

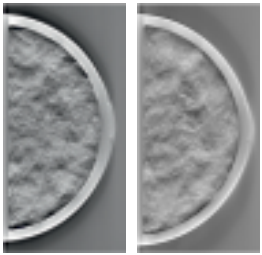
- A stack of fine tolerance PMMA plates
- TORMAM phantom
- NPS Aluminium filter
- MTF stainless steel edge
- Stainless steel protective filter
- X-ray rulers (x4)

Measure:

- AEC checks
- Detector homogeneity
- Geometric distortion
- SNR
- CNR
- Image Resolution
- Z-resolution

Conforms to standards:
EUREF Protocol Breast Tomosynthesis Quality Control Protocol Version 1.0

VOXMAM



A breast tissue simulating test object designed to be used to compare image quality between different exposure parameters within a single system or across different breast tomosynthesis systems.

Contains features:

- Standard breast thickness (45mm) 220mm diameter semi-circle comprising breast tissue simulating material encased in PMMA.
- 4x groups of particles representing micro-calcifications randomly located in the XY plane and at approximately 10mm intervals in the Z plane.

Please note: each VOXMAM is unique in its spatial distribution of structural detail.

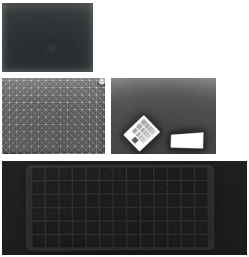
Agatha

Agatha is an image quality phantom used for constancy testing of digital breast tomosynthesis systems.

Measure:

- Missing tissue tests
- Line Object Spread Function (LOSF)
- Signal Difference to Noise Ratio (SDNR)
- Z-direction sensitivity profiles (ZSP)
- 3D MTF
- System geometry
- Tomographic motion
- Reconstruction effects on SDNR and ASF

DMAM2



A set of test objects for digital mammography systems including:

- 78 gold contrast details (also available separately)
- 6 groups of multi-directional filaments
- PMMA plates (one plate with encapsulated Al foil for SNR)
- Radiopaque mesh 400 micron
- Radiopaque grid of horizontal, vertical and diagonal lines
- Stainless steel MTF edge accurate to ±20 microns
- Spatial Resolution Test Pattern
- X-ray to light field alignment rulers & phosphor screens
- Aluminium filter 2.0mm, 99.9%+ purity for homogeneity tests
- Foam spacers to set the compression paddle position
- 1.0mm stainless steel plate to shield the detector from X-rays

Designed in accordance with European guidelines for quality assurance in breast cancer screening and diagnosis (fourth edition) - ISBN 92-79-01258-4.

CEDM

Leeds Test Objects' CEDM phantom is designed for quality control of contrast enhanced digital mammography.

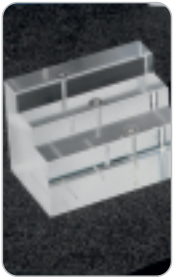
The CEDM phantom is made of PMMA and contains independently fillable spherical voids with diameter 1.0, 2.0, 5.0, 10.0 and 15.0 mm, and five independently fillable fibrils. The voids can be filled with blood mimicking fluid (Leeds BMF) or saline solution mixed with contrast agent.

CEDM includes a syringe and needle.

Measure:

- CNR

TO BIOPSY



This test object allows the user to check the accuracy and repeatability of the throw length for core needle biopsies using a stereotactic biopsy unit.

TO BIOPSY consists of a PMMA block containing two sets of holes of different depths and diameters.

Measure:

- Fine needle aspiriation stereotactic localisation testing
- Core biopsy stereotactic localisation testing

CoreView

A kit of test objects designed to be used for an ongoing check of imaging performance on dedicated core biopsy imaging systems, and specifically sized to fit the market-leading COREVISION system.

Set includes:

- Threshold contrast phantom
- Spatial resolution test pattern
- Geometric distortion phantom
- Uniformity phantom
- AEC check phantom

TO PASMAM

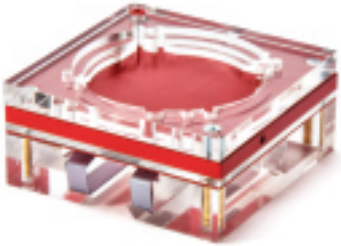
TO PASMAM is designed to be used to check the image quality performance of digital mammography systems, both on commissioning and on a routine basis.

TO PASMAM Comprises:

- Aluminium step wedge
- Structure plate
- 4 sets of steel balls (missing tissue test)
- PMMA insert with engraved square ROI
- High contrast insert
- CNR insert (Al square)
- 4 attenuator plates (2x 10mm and 2x 20mm)

Conforms to standards
PAS 1054 & DIN 6868-162

TOR DEN Digital



TOR DEN Digital is designed to be used to check the image quality performance of digital intra-oral x-ray systems.

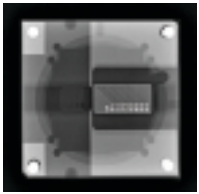
TOR DEN Digital OPG is supplied with a tripod fitted with an alignment jig, to be used as a positioning device for OPG systems.

Measure:

- Limiting Spatial Resolution
- Low-contrast Resolution
- Image Receptor Dose
- Radiation Field Alignment
- Image Quality Homogeneity

Conforms to standards:
IEC 61223-3-4 & IEC 61223-2-7

TOR DEN+



TOR DEN+ is designed for checking the image quality performance of modern high resolution digital intra-oral x-ray systems.

TOR DEN+ can be fitted to a tripod for use with OPG systems.

Measure:

- Limiting Spatial Resolution (8.0 - 24 LP/mm)
- Low Contrast Resolution (0.2, 0.5, 1.0 and 2.0mm dia.), (2.0, 1.0, 0.5, 0.3 and 0.1 mm depth)

Conforms to standards:
IEC 61223-3-4 & 61223-2-7

TOR DEN Conventional

Leeds Test Objects' TOR DEN Conventional phantom is designed to be used to check the image quality performance of conventional dental x-ray systems.

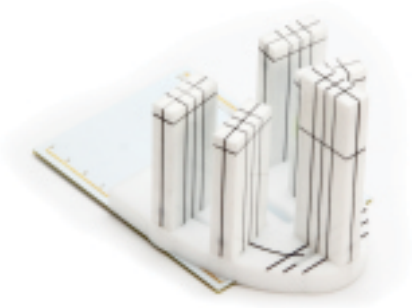
TOR DEN Conventional is supplied with a magnetic jig, to be used as a positioning device. For systems with no magnetic receptor, a suction jig is also available.

Measure:

- Optical Density Constancy
- Radiation Field Alignment (for Panoramic and Cephalometric tests only)

Conforms to standards:
IEC 61223-3-4

TO PAN



A test object that allows the complex focal trough of the panoramic x-ray unit to be quantified, as well as the capacity for spatial resolution testing using line-pair test patterns (available separately) and contrast resolution insert (available separately).

This allows full assessment of parameters affecting image quality. Can be used in film and digital systems.

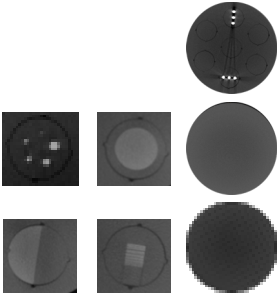
Measure:

- Limiting spatial resolution
- Contrast resolution
- Quantification of the focal trough and image layer

See also:

Test Patterns

SedentexCT IQ



A PMMA cylinder (160 mm diameter) with recesses to house test inserts.

Measure:

- Noise
- Uniformity
- Geometric Distortion
- Spatial Resolution
- Contrast Resolution
- Pixel Intensity Value / HU / CT Number
- Beam Hardening Artefacts

Conforms to standard
EC No 172 : 2012

See also:
CT & Radia Software

SedentexCT DI

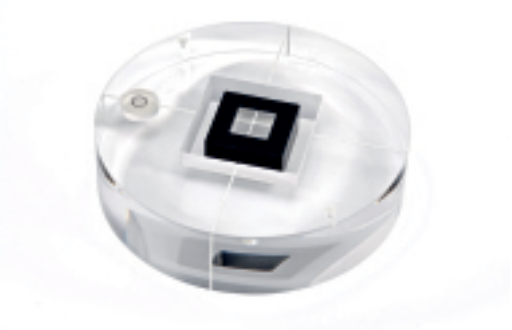
The SedentexCT Dose Index (DI) phantom comprises a stack of PMMA plates forming a cylinder representing the adult head. Several types of detector systems are catered for:

- Ionisation chambers
- Thermoluminescent detectors (TLDs)
- Gafchromic film

Conforms to standard
EC No 172 : 2012

See also:
CT

CBCT-161



CBCT-161 is used for constancy testing in Cone Beam CT.

Measure:

- Pixel Intensity Value Linearity
- Noise
- CNR
- Homogeneity
- Artefacts
- MTF

CBCT-161+

As above, includes rods of Delrin 1, 2, 3, 4 and 5mm dia. - approx. 2% contrast.

CBCT-161-A

Acceptance testing accessory to CBCT-161 (160 x 60, 160 x 50 mm PMMA cylinders).

Conforms to standard DIN 6868-161

See also:

AutoPIA Software

CBCT-161 mini

CBCT-161 mini is a miniaturised version of the CBCT-161 phantom, suitable for small FOV CBCT systems. Comes with a simple to use levelling and positioning platform.

Measure:

- Pixel Intensity Value Linearity
- Noise
- CNR
- Homogeneity
- Artefacts
- MTF

FREE Software Included

See also:
CBCT-161

DENTEST

Leeds Test Objects' DENTEST phantom is designed to be used to check the image quality performance of digital intra-oral dental x-ray systems. These test should be carried out on commissioning, and on a routine basis to check for any deterioration in performance.

Measure:

- Dynamic range
- Spatial resolution
- Low contrast resolution
- Detector homogeneity

Developed with
Poole Hospital NHS

TO UNIDENT

Designed for use either with conventional intra-oral film or with digital detector systems, TO UniDENT is a step wedge test object which combines ease-of-use with a clinically-relevant indication of the performance of the entire imaging chain.

Features:

- For use with film or digital
- Quick, easy set-up
- Optimise exposure levels and routine QA checks
- Checks entire imaging process
- Highlights only clinically-important changes

CT AEC

CT AEC is used for constancy testing of CT AEC systems.

Set includes:

- 11x 25mm thick PMMA ellipses which can be re-configured to any order
- Blank inserts for AEC checks
- Tubes to accommodate pencil ion chambers for dosimetry
- 2x Sturdy end plates with carrying handles
- Spirit level and centre markings for easy positioning
- Wheeled protective storm case with telescopic handle
- Sedentex CT-IQ test inserts (available separately)

FREE Software Included

See also:

Sedentex CT IQ

CT AEC-50

CT AEC-50 is used for constancy testing of CT AEC systems.

Set includes:

- 6x 50mm thick PMMA ellipses which can be re-configured to any order
- 2x Sturdy end plates with carrying handles
- Spirit level and centre markings for easy positioning
- Wheeled protective storm case with telescopic handle

FREE Software Included

TO CTDI

Permits the user to measure the dose index for Computed Tomography systems.

TO CTDI

160mm diameter adult head and 320mm diameter adult body PMMA cylinders, 9 pegs, cylinder supports, ion chamber adaptors

TO CTDI+ (pictured)

As above, including an additional cylinder, which represents the paediatric head (100mm diameter) and nests within the adult head cylinder.

Meets the requirements of standards:
IEC 61223-3-5
IEC 61223-3-6
IEC 60601-2-44

See also:
Dosimetry & AEC

CTDI Holder

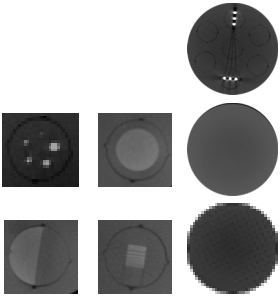
Holder for Leeds Test Objects' TO CTDI & TO CTDI+ phantoms, which enables hanging of the phantom off the edge of its carry case. The holder has been carefully designed to allow for suspension of the phantom over the couch end, ensuring balance and rigidity.

Please note: This accessory requires screw holes in the TO CTDI+ phantom to fasten to the holder – please mention if this is required at the time of order. Modification of existing phantoms is available upon request.

See also:

SedentexCT IQ

SedentexCT IQ



A PMMA cylinder (160 mm diameter) with recesses to house test inserts.

Measure:

- Noise
- Uniformity
- Geometric Distortion
- Spatial Resolution
- Contrast Resolution
- Pixel Intensity Value / HU / CT Number
- Beam Hardening Artefacts

See also:

Dental & Radia Software

CTIQ

CTIQ comprises a PMMA cylinder (160mm diameter) with recesses to house test inserts. Designed to be nested within a TO CTDI phantom.

When used in conjunction with TO CTDI, this phantom enables the following tests:

- Geometric Distortion
- Noise / Uniformity
- Artefacts
- MTF
- Spatial Resolution
- Contrast Resolution
- Slice Profile

See also:
TO CTDI

CBCT-150

CBCT-150 phantom is used for constancy testing of CBCT and 3D-Fluoroscopy systems.

Details:

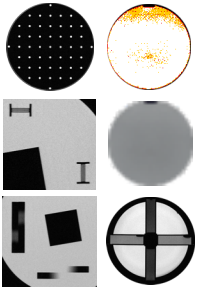
- PMMA cuboid 120 x 120 x 60 mm
- Rows of 4x air holes of 0.5 - 1.3 mm diameter with Spatial Frequencies 0.38 - 1.0 mm
- Tripod for universal positioning

Measure:

- Spatial Resolution

Conforms to standard
DIN 6868-150

MagIQ



A QA test phantom for magnetic resonance imaging comprising a single chamber (MagIQ) or two identical chambers (MagIQ Duo), which may be filled with different solutions to create two test objects (e.g. high field and low field). Automated scoring software is available separately.

Measure:

- Geometric Distortion
- Spatial Resolution
- Contrast Resolution - Fat Suppression
- SNR
- Ghosting
- Uniformity
- Slice Profile
- T1 and T2 gel tubes (available separately)

Supplied with 1.5T and 3T Solutions.

Conforms to standard IEC 62464-1:2007

See also:

Radia software

MagIQ 142

MagIQ 142 is an image quality phantom for Magnetic Resonance Imaging (MRI) comprising a main chamber and four 'test tubes' which may be filled with different solutions to create a total of 5 separate signal compartments.

Measure:

- Geometric Distortion
- Spatial Resolution
- Contrast Resolution - Fat Suppression
- SNR
- Ghosting
- Uniformity
- Slice Profile

Supplied with 1.5T and 3T Solutions.

Dimensions: 142mm dia. and 75mm deep

Conforms to standard IEC 62464-1:2007

See also:
MagIQ

MagIQ Diffusion

MagIQ Diffusion is used for calibration of contrast values when performing Diffusion Weighted Imaging (DWI) and Apparent Diffusion Coefficient (ADC) imaging protocols.

Measure:

MagIQ Diffusion allows the user to simultaneously measure 7 different values.

MagIQ Oncology

MagIQ Oncology is designed for image quality assessment in the diagnosis, treatment planning and therapy of cancer (especially breast and prostate tumours).

Measure:

- Homogeneity
- Contrast resolution
- Slice thickness
- MTF / line pairs
- Spherical gland volume
- Geometric distortion
- Silicon suppression techniques
- Fat saturation techniques
- Detachable section for T1 and T2 values and DCE
- Detachable section for Gadolinium doped water

MagIQ Breast

Features:

- A set of two phantoms (one for each breast well)
- Each phantom has two separately filled chambers
- Sized to fit breast coils

Benefits:

- Quantitative measurement of SNR of the water signal from each phantom
- Fat fraction using a combination of the water and fat only images in the fat chambers when using 'Dixon' fat separation techniques, or a ratio of T1 and T1 fat-sat to assess fat suppression
- Simple to use
- Easy set up, requiring only locally available pads to stabilise in breast well

T1 & T2 Gels

A set of 18 gel-filled tubes with calibrated T1 and T2 values, sized to insert into the contrast sections of MagIQ Solo and MagIQ Duo phantoms.

Supplied in a protective foam lined case.

PET IQ

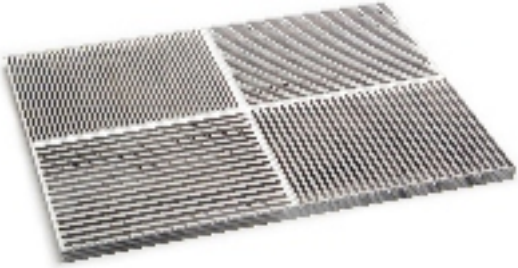
Leeds Test Objects' PET IQ Phantom is a realistic anthropomorphic PMMA vessel, which simulates the trunk of the human body.

On one face of the phantom is a circular plate into which six hollow PMMA spheres can be screwed. The wall thickness of the spheres is 1.25mm. The spheres are filled with water for cold lesion imaging and with 18FDG for hot lesion imaging.

PET IQ is supplied in a wheeled hard case with a telescopic handle.

Conforms to standards
NEMA NU2(2007) &
IEC 61675-1(2008)

Gamma Resolution



Rigid PMMA and Pb bar phantom for the quality control of spatial resolution of gamma cameras. The Gamma resolution phantom consists of four sections, each with different bar dimensions, and features engraved, pigment filled centre lines for accurate and repeatable positioning.

- **Quadrant 1**

Number of bars: 41
Bar width and spacing: 3.2mm
Bar length: 190mm

- **Quadrant 2**

Number of bars: 24
Bar width and spacing: 4.0mm
Bar length: 260mm

- **Quadrant 3**

Number of bars: 28
Bar width and spacing: 4.8mm
Bar length: 190mm

- **Quadrant 4**

Number of bars: 15
Bar width and spacing: 6.4mm
Bar length: 260mm

Gamma Flood

Rigid PMMA flood phantom for the quality control of detector homogeneity and subsequent correction in gamma cameras.

The two filling and venting plugs of the Leeds Test Objects Gamma Flood phantom are situated on the flat surface, not on one of the edges as with many other manufacturers.

Thickness tolerances on materials and the fillable voids are ±1% of nominal ensuring high precision.

Gamma Distortion

Rigid PMMA phantom for the quality control of geometric distortion and spatial resolution of gamma cameras.

The Gamma distortion phantom consists of a series of 1mm dia. 3mm deep holes at 80mm pitch which can be filled with activity.

Measure (when filled):

- Point-to-point measurement
- Point spread function (PSF)

SPECT IQ

Nuclear Medicine

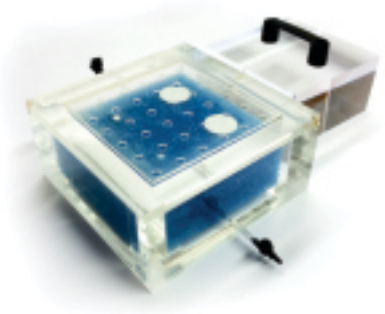
SPECT IQ is designed for checking image quality performance of SPECT systems.

Measure:

- Centre-of-rotation error
- Uniformity
- Spatial resolution
- Attenuation and scatter compensation
- Single slice volume sensitivity
- Total system volume sensitivity
- Lesion detectability

Conforms to standard AAPM52

The Harefield VQ SPECT



The Harefield VQ SPECT is designed for checking image quality of SPECT systems using perfusion ventilation (VQ) with isotopes Tc-99 and Kr-81.

Measure:

- Count sensitivity QAA (relative to LEAP)
- Count sensitivity Kr-81m (relative to LEAP)
- Relative loss of resolution between perfusion only to dual isotope acquisition
- Downscatter (%)

PET\CT\MR Cubes

A set of 7 clear PMMA cubes, 17x17x17mm, with a 5mm dia. spherical fillable void, which can be filled with any mixture of radionuclide, CT contrast agent or MR contrast agent and sealed with a nylon screw (provided).

These cubes can be used as:

- Point source markers
- Imaging aids
- Skin markers for clinical use

ISO Cube

ISO Cube is a routine phantom made from water equivalent material for testing of positioning, alignment and isocentre checks of CBCT imaging systems, in both kV (imaging) and MV (treatment) energy ranges. This phantom is supplied with an alignment plate for fast & easy set up.

Measure:

- Positioning and re-positioning
- Laser alignment
- Light-field size
- Light-field alignment
- kV and MV coordinate coincidence
- CBCT coordinate isocentre coincidence

Conforms to
TG-142 recommendations

See also:
Radia Software

RT EPID

RT EPID phantom is designed for routine QA testing of the image quality performance of EPID systems, and offers a simple setup with its innovative design. The phantom measures 25 x 25cm to test a large portion of the panel, and features alignment markers for easy positioning.

Measure:

- Geometric distortion
- EPID signal isotropy
- Resolution
- Low contrast detectability
- Uniformity
- Noise

Conforms to TG-142 recommendations

See also:

Radia Software

RT Align

RT Align is designed for routine QA testing of Radiotherapy systems. The phantom features laser alignment markers and field size engravings, as well as embedded high-contrast markers, for accurate, repeatable testing.

Measure:

- Isocentre alignment
- Light field alignment
- Field size
- Couch travel (3D)
- EPID scaling and travel
- Couch rotation

Conforms to TG-142 recommendations

See also:
Radia Software

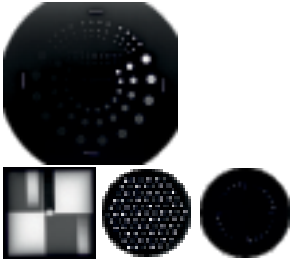
RT Align Rotate

Designed for routine QA testing of Radiotherapy systems, the RT Align Rotate contains a larger alignment plate and a jig to enable the plate to be positioned in any orientation.

Measure:

- Light field alignment
- Field size
- Couch travel (3D)
- EPID scaling and movement (embedded BB's)
- Couch rotation

DSF Set



A set of four test objects, the DSF set is supplementary to the SFS set of test objects and checks those parameters which are particularly relevant to DSF imaging. After mask images have been obtained the image content is changed by the manipulation of various plates.

Set includes:

- TO J3
- TO Q3
- TO 20
- TO D3

See also:

SFS Set, TO20

TO DSA

The TO DSA phantom is used for quality control testing of the image quality performance of digital subtraction angiography systems.

Measure:

- Video system stability
- Dynamic range
- Spatial resolution
- Contrast (Iodine) resolution
- Mis-registration artefacts
- Contrast uniformity
- Contrast linearity
- Spatial uniformity

TO DSA is supplied in a wheeled hard case with a telescopic handle.

Conforms to AAPM Report 15
Meets IEC 61223-3-3

DSA 8/54

Leeds Test Objects DSA 8/54 phantom is designed for checking the image quality performance of digital subtraction fluoroscopy x-ray systems, on both a commissioning and routine basis.

DSA 8/54 comprises a PMMA phantom with a Cu step wedge and a dynamic PMMA insert with 4 Al strips, powered by a manual pneumatic bulb with a 6 metre hose.

Measure:

- Artefacts
- Dynamic range
- Logarithmic errors
- Contrast media sensitivity

Conforms to standards
DIN 6868-8 & 6868-54

TO DR

These test objects are designed for systems which operate by sensing mean signal levels. The TO DR tests dynamic range by measuring detail visibility over a wide range of input X-ray intensities. Different designs cater for subtraction and non-subtraction systems.

TO DR (4 Piece)

Supplied in a set that allows it to be used for both subtraction and non-subtraction systems.

TO DR (2 Piece)

For use with non-subtraction systems only.

See also:
DSF Set

TO 10 & TO 12

These test objects are designed for quick quantitative assessments of image quality. The results can be plotted on a Threshold Detection Index Curve.

TO 10

TO.10 Fluoroscopic X-Ray systems.
A range of 9 contrasts per detail size.

TO 12

TO.12 Fluorography systems.
A range of 9 contrasts per detail size.

TO 16 & TO 20

TO 16

TO.16 Computed Digital Radiography systems.
A range of 12 contrasts per detail size.

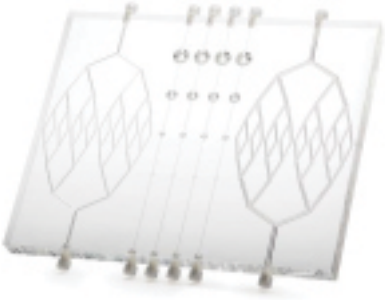
TO 20

TO.20 Digital Fluoroscopy, CR and DR systems.
A range of 12 contrasts per detail size.

See also:
AutoPIA Software

CEVASC

Contrast Enhanced Imaging



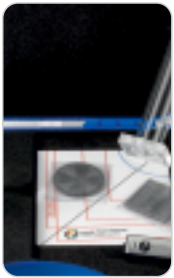
This PMMA phantom is a unique and protected design comprising a 240 x 300 x 20 mm PMMA block containing embedded channels and voids.

- Four rows of spherical voids (1 - 15 mm diam) connected by 0.25mm diameter cylindrical channels.
- 1x vascular structure with 3.5 - 2.0 mm diameter cylindrical channels.
- 1x vascular structure with 1.7 - 1.0 mm diameter cylindrical channels.

Entry and exit ports on the edge of the phantom allow filling and sealing of the phantom for single or multi-modality studies.

N.B. Customer specified designs are available upon request.

TO FSJ General



The TO FSJ (gen) test object is designed for use with general radiography X-ray systems.This test object (when used with an appropriate test pattern) allows the medical physicist or radiographer to measure the focal spot of their x-ray system.

Features

- 30cm tower
- Quick central alignment check
- Can be used with line pair test pattern, star test pattern or slit camera

See also:
Test Patterns

TO FSJ Mammo

This test object is supplied with a 1° star test pattern which allows the user to measure the focal spot of the mammography x-ray system.

The TO FSJ also contains a centre marker to ensure that the jig is correctly aligned to the central beam axis.

See also:
Test Patterns

HVL Filters & Stand

When used with TO HVL filter stand, the HVL filter sets allow the medical physicist or radiographer to test the half value layer (HVL) of their X-ray system.

Sets available:

- General Radiography:
  99.5% Al, 100x100mm
  (2x 2.0mm, 3x 1.0mm, 3x 0.5mm and 2x 0.25mm)

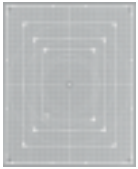
- Standard Mammography:
  99.5% Al, 100x100mm
  (1x 0.2mm and 5x 0.1mm)

- High Purity Mammography:
  99.9% Al, 100x100mm
  (6x 0.1mm)

HVL Stand

30 - 35 - 45 - 50 cm

TOR ABC



A routine test object used for beam alignment and centring in radiography and fluoroscopy.

TOR ABC is available on its own or with a vertical bucky jig as an optional extra (hanger or suction design).

A special variant of the vertical bucky jig is available for Siemens' Vertix system.

Measure:

- The correspondence of the light field with the effective radiation field
- The determination of the position of the central beam
- The central beam angle deviation from 90°, relative to the plane of the film/detector, is below a limit beyond which the image quality would be adversely affected

TO AEC

TO AEC is an x-ray quality assurance phantom comprising a stack of PMMA plates which allow the user to check the consistency, repeatability and reproducibility of AEC system function.

PMMA plate dimensions:

- 8 pieces - 25 x 250 x 250 mm PMMA
- 4 pieces - 10 x 250 x 250 mm PMMA
- 2 pieces - 5 x 250 x 250 mm PMMA

* All PMMA plates are produced with a dimensional tolerance of nominal ±10%.

Meets testing requirements:
IPEM Report 34 part IV
& IPEM Report 91

TO MTF

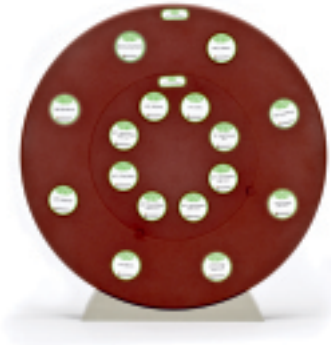
An MTF Edge test device comprising a Tungsten edge.

- 1mm thick tungsten plate (50mm diameter)
- Tungsten purity of 90%+
- Edge accuracy of 5µm
- Repeatable angular adjustment

FREE Software Included

Conforms to standards:
IEC 62220-3-2008, 62220-1:2004
& 62220-2-2007

CT TE

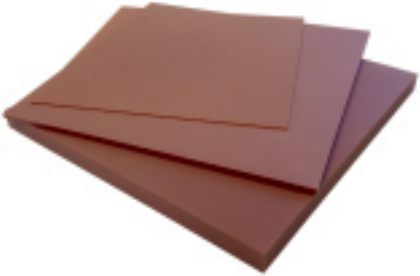


Tissue Equivalent phantom consisting of a water equivalent nested head and body phantom each with 8 holes to house interchangeable inserts of different tissue equivalent materials as follows:

- Water equivalent (WT1)
- Adipose (AP7)
- Breast (BR12)
- Hard Cortical Bone (SB5)
- Inner Bone (Ib7)
- Rib/Average Bone (RB2)
- Lung (LN10)
- Soft Tissue (ST1)
- Kidney (KD1)
- Liver (LV1)

Other materials available upon request.

The physical density (gm/cm^3) and electron density of each tissue equivalent is provided with each CT TE phantom, and allows the user to determine the CT number corresponding to the different tissue equivalents.



Suitable for both kV and MV energies.

Available in many sizes and shapes, including molded or machined cavities to house dosemeters.

Materials available:

- Water equivalent (WT1)
- Adipose (AP7)
- Breast (BR12)
- Hard Cortical Bone (SB5)
- Inner Bone (IB7)
- Brain (WTe)
- Rib/Average Bone (RB2)
- Lung (LN10)
- Soft Tissue (ST1)
- Kidney (KD1)
- Liver (Lv1)
- Bone Equivalent (HA up to 1200 mg/cm^3)

Please contact us for more details and pricing.

TO H2O

Constructed from PMMA and featuring two plugs, our water phantoms are available in four sizes:

- 300 x 300 x 50 mm
- 300 x 300 x 100 mm
- 300 x 300 x 150 mm
- 300 x 300 x 200 mm

Patient Equivalent Filters

25mm Al Attenuator

23.0 x 152.4 x 152.4mm Aluminium with 2.0 x168 x 175mm mounting plate. Optional Copper filter attachment.

21mm Al Attenuator

19.0 x 152.4 x 152.4mm Aluminium with 2.0 x168 x 175mm mounting plate. Optional Copper filter attachment.

PMMA / Cu

30.0 x 310.0 x 310.0mm PMMA plus 1.0mm Copper.

Cu Filters

We supply a wide range of high purity metallic filters in many thicknesses. Please send us your specification to receive a quote.

AutoPIA

AutoPIA (**Auto**matic **P**hantom **I**mage **A**nalysis) is software for automatic analysis of test images of objects (phantoms) used to evaluate image quality. AutoPIA is able to quickly provide reproducible and objective quality indices for routine quality control processes aimed at optimising the performance of an X-ray system.

Available for phantoms:

- TOR 18FG
- TOR CDR
- TO 10/12 and TO 16/20
- TOR MAS
- TOR MAX
- PIX-13
- TOR MAM
- DMAM2
- DMAM2 Gold
- PIXMAM 300x240
- PIXMAM 250D
- CBCT-161

LTO Software

Analysis software for automated scoring and trending of diagnostic image quality phantoms. Radia allows the user to meet TG142 and insurance requirements and provides objective results for trending and tracking image quality.

Available for phantoms:

- TOR 18FG
- SedentexCT IQ
- MagIQ

- ISO Cube
- RT EPID
- RT Align

TEST PATTERNS

Line Pair Spatial Resolution Patterns

Designed for a quick quantitative assessment of limiting spatial resolution.

Focal Spot Star Patterns

Designed for a quick quantitative assessment of focal spot size.

Slit Camera

Designed for a quick quantitative assessment of focal spot size. The width of the slit can be manufactured to suit your application (down to a minimum of 0.01mm) and the length of the slit is 10mm.

See also:

Focal Spot

NU4 PET IQ

NU4 PET IQ phantom was designed to meet the NEMA NU4-2008 protocol for testing image quality, attenuation correction and scatter correction of small Field-Of-View PET systems.

The phantom consists of a cylinder (diameter 33.5mm) with the following test features:

- 5x fillable rods 1-5mm diameter
- 2x 8mm diameter fillable cylinders*
- 1x uniform fillable section 15mm thick

* separated from main chamber by 1mm wall thickness

Meets NEMA NU4-2008 protocol

MicroCT Set

The MicroCT Set is a set of test objects for assessment of image quality in MicroCT systems.

Set Includes:

- Bone density (HA) Phantom
- Low Contrast Phantom
- CT Dose Index Phantom
- Image Reconstruction Artefacts Phantom
- Uniformity and Noise - Water Phantom
- Point Spread Function (PSF) Wire Phantom

Leeds Test Objects

medical imaging phantoms

MEDİBİM MEDİKAL BİLİŞİM ve KALİBRASYON

TÜRKİYE YETKİLİ TEMSİLCİSİ

GÜZELYURT MAH. MEHMET AKİF ERSOY CAD. NO:38

GÖKDEMİR PLAZA KAT: 2 D: 10 ESENYURT İSTANBUL

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ISO 9001