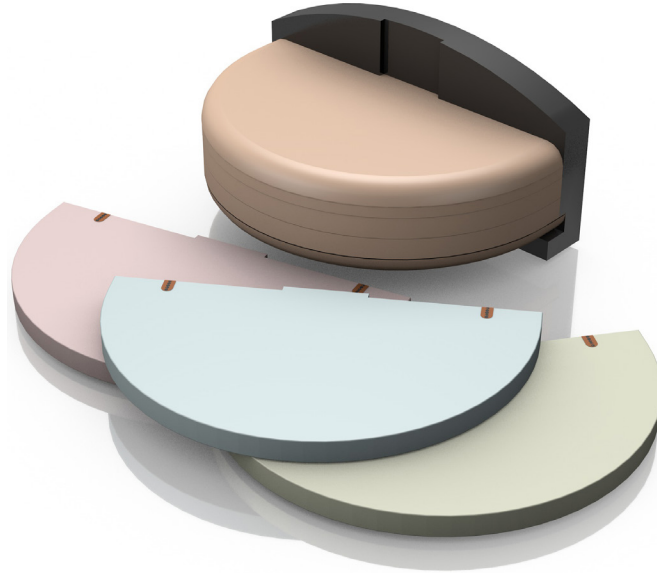


Digital Breast Tomosynthesis QC Phantom

Model 021



ASSESS BREAST TOMOSYNTHESIS IMAGE QUALITY

The CIRS Digital Breast Tomosynthesis QC Phantom is designed to address quality control for Digital Breast Tomosynthesis systems (DBT). The phantom can be used for software analysis and “traditional” visual tests.

The phantom consists of eight homogeneous slabs made from breast-equivalent material in 50/50 ratio of gland and adipose tissue (BR50/50). Optional swirled slabs, that can be purchased separately, are comprised of 100% adipose and 100% gland tissues together in an approximate 50/50 ratio by weight. Three homogeneous slabs include

imaging targets. Each semicircular shaped slab measures 100 x 180 x 10 mm. This allows for using a combination of homogeneous and swirled slabs to test the influence of scatter radiation on image quality in more clinically-relevant, inhomogeneous conditions.

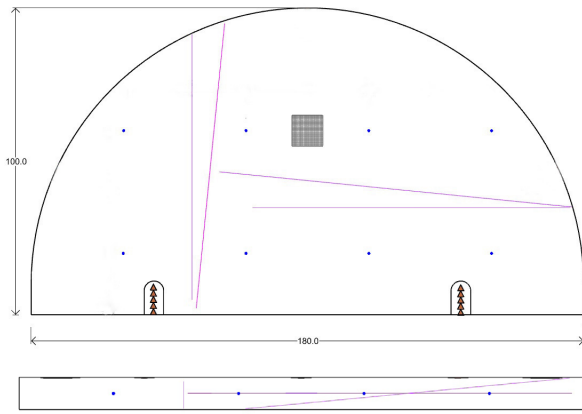
The phantom includes a positioning holder with magnetic fixation for repeatable alignment and positioning on the DBT scanner.

Measured Parameters

- Volume coverage missing tissues
- Pixel Value Uniformity
- Noise: SNR & SDNR
- Resolution in X, Y and Z directions (MTF, ESF & PSF)
- Geometric accuracy 3D
- Artifact assessment
- Visual detectability: specs, masses & fibers
- Complex background for clinically relevant measurements

Benefits

- Acceptance testing, daily and routine QC
- Tests image quality and stability of DBT systems
- Consistent and repeatable targets in homogeneous background
- Optional complex background provides clinically relevant challenge for target detection
- Slab configurations provide range of thicknesses with or without targets
- Developed to meet WIP requirements of EUREF and AAPM TG245



Target Slab 1: Target Map, Top & Front View

TARGET SLAB 1

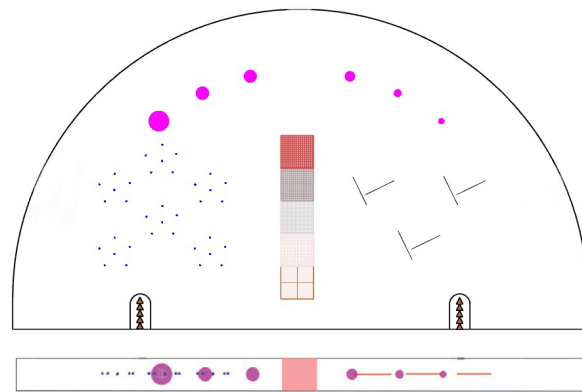
TUNGSTEN WIRES Ø 50 µm
 Qty: 2
 Location: X-Y plane
 Tilt: 5.7 degrees to X & Y axes

ALUMINUM SHEET (AL 99.999%)
 10 x 10 mm x 200 µm

MISSED TISSUES TARGETS
 Qty: 5 elements
 Size: 2 mm x 5 mm

TUNGSTEN WIRES Ø 50 µm
 Qty: 2
 Location: X-Z & Y-Z planes
 Tilt: 5.7 degrees to X & Y axes

CERAMIC BALLS
 Qty: 8
 Size: Ø 0.8 mm
 40 x 40 mm grid



Target Slab 2: Target Map, Top and Front View

TARGET SLAB 2

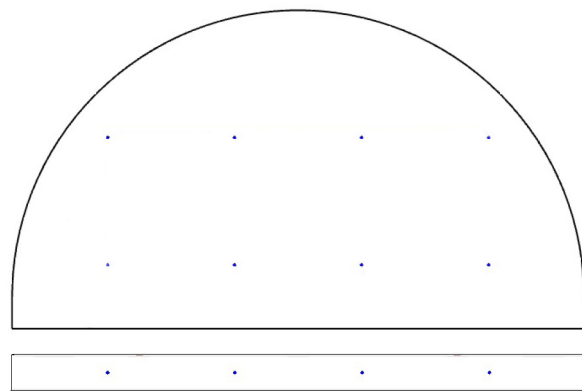
SPECKS (GLASS)
 1. 0.330 mm
 2. 0.280 mm
 3. 0.230 mm
 4. 0.200 mm
 5. 0.170 mm
 6. 0.140 mm

FIBERS (10 MM LENGTH)
 1. Ø 0.15 mm
 2. Ø 0.18 mm
 3. Ø 0.23 mm
 4. Ø 0.28 mm
 5. Ø 0.38 mm
 6. Ø 0.41 mm

MISSED TISSUES TARGETS
 Qty: 5 elements
 Size: 2 mm x 5

SPHEROIDAL MASSES (BREAST CARCINOMA)
 1. Ø 6.3 mm
 2. Ø 4.7 mm
 3. Ø 3.9 mm
 4. Ø 3.1 mm
 5. Ø 2.3 mm
 6. Ø 1.8 mm

STEP WEDGE
 1. 100% gland
 2. 70% gland
 3. 50% gland
 4. 30% gland
 5. 100% adipose



Target Slab 3: Target Map, Top and Front View

TARGET SLAB 3

CERAMIC BALLS
 Qty: 8
 Size: Ø 0.8 mm
 40 x 40 mm grid



SPECIFICATIONS

OVERALL DIMENSIONS	127 mm x 180 mm x 100 mm
INDIVIDUAL SLAB DIMENSIONS	6 Slabs: 110 mm x 180 mm x 10 mm, 1 Slab: 115 mm x 180 mm x 10 mm, (support slab) 1 Slab: 110 mm x 180 mm x 5 mm, semicircular shape
PHANTOM WEIGHT	1.62 kg (3.55 lb)
MATERIALS	BR50/50, BRSW5050

BREAST TOMOSYNTHESIS QC SET

PART #	QTY	COMPONENT DESCRIPTION
-	4	Solid Homogeneous Slabs 1 cm thick
-	1	Solid Homogeneous Slabs 0.5 cm thick
-	3	Target Homogeneous Slabs 1 cm thick
-	1	Positioning Holder with Magnetic Fixation
-	-	48-month warranty
021-01	Optional	BR3D Background Slab for DBT phantom 021. Optional slab made of BRSW5050 compatible with 021 magnetic Holder

