

Spectral-CT Phantom

The QRM-Spectral-CT Phantom was designed to test multi-energy spectral CT protocols and post processing techniques.

Image acquisition and image processing at multiple energy levels is improving visualization for computed tomography.

The Spectral-CT Phantom can be used to test different type of CT-machines with dual-energy, multi-energy or photon-counting setups.

The 100 mm cylinder contains 4 holes of 20 mm diameter to house different test rods of solid tissue equivalent materials or fillable rods that can be used with water or contrast media.

The phantom includes a set of different solid rods of iodine, Ca-hydroxyapatite, water and soft tissue equivalents as adipose, muscle, bone, and lung.

Mass density, electron density and effective atomic number (z) are given for each material.

Features

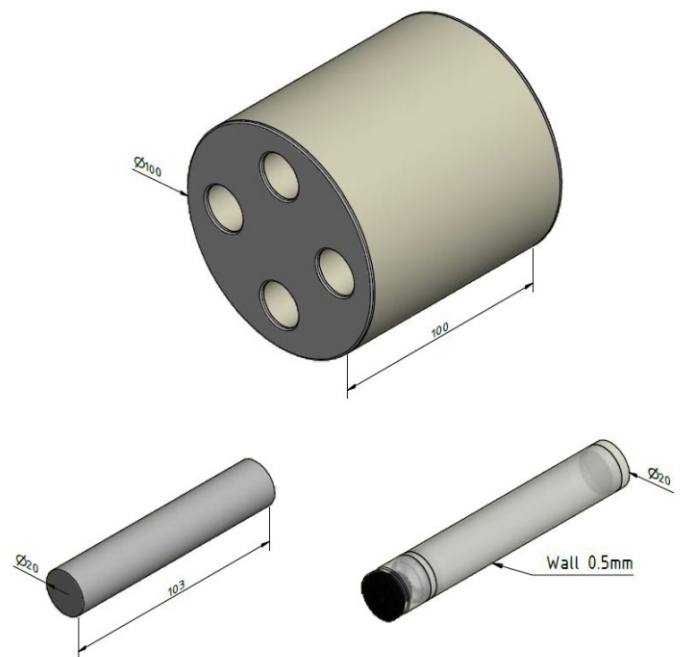
- Test the accuracy and consistency of spectral CT
- Test the Scanner performance
- Perform a material characterization and quantification of tissue equivalent materials
- Decompose iodine and Ca levels
- Test the post processing techniques of spectral CT

Part list of QRM-SCT

- Water equivalent cylinder with 4 bores
- 4 plugs CTWater® (0 HU @ 70 - 150 kV)
- 12 test rods:
 - adipose tissue (ICRU 44)
 - muscle tissue (ICRU 44)
 - lung tissue (ICRU 44)
 - liver tissue (ICRU 44)
 - 4 different Iodine rods (CTIodine®)*
 - 2, 5, 10 and 15 mg I/cm³
 - 4 different Ca-HA rods (Bone)
 - 100, 200, 400 and 800 mg HA/cm³
- 2 fillable rods/tubes



Spectral-CT Phantom

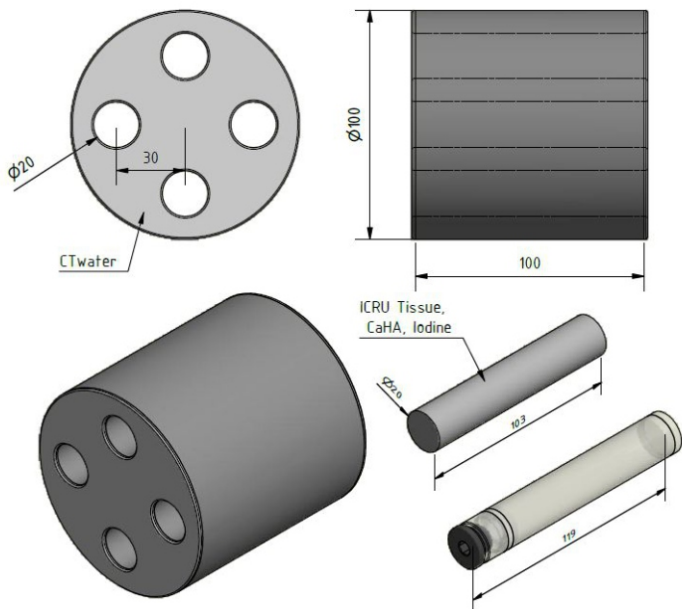


Phantom dimensions, D100 cylinder, ICRU rods and fillable rods

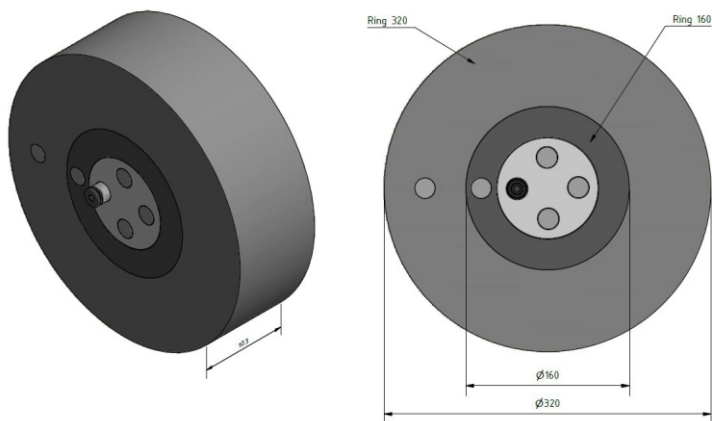


D100: fits also into Thorax and Abdomen Phantom

Spectral-CT Phantom



Schematic view of the DE-Phantom


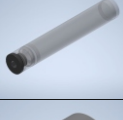
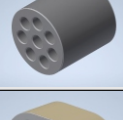


QRM-SCT with optional rings D160 and S320

Specifications

Phantom diameter	100 mm
Phantom length	103 mm
Phantom weight	1.0 kg
Rod diameter	20 mm
Rod length	103 mm

Optional available

Ring 160	CTWATER® D160mm / H100, bore 20	
Ring 320	CTWATER® D320mm / H100, bore 20	
Additional Rods	Tissue equivalents ICRU 44/46 Iodine, CaHA	
Tubes	Fillable rods	
Cylinder	CTWATER® D100 mm 8 holes	
Abdomen	200 x 300 mm H 100	

*specified values. Nominal values can vary with respect to manufacturing method and imaging device!

References:

- [1] Ehn S, Sellerer T, Noel P, et al.
Assessment of quantification accuracy and image quality of a full-body dual-layer spectral CT system
J Appl Clin Med Phys 2018;19:1: 204–217