

# ConeBeam Phantom

The QRM-ConeBeam-Phantom is the most suitable tool to evaluate the imaging performance of cone-beam and flat-panel CT scanners.

These scanners include a wide range technical solutions, e.g. the DVT x-ray scanners, mainly used for 3-D dental imaging, C-arm or angio x-ray machines with options for 3-D imaging or CT scanners with flat-panel detectors covering a large scan volume.

The **QRM-ConeBeam** Phantom was designed to cover the whole range of image quality achievable with this type of imaging equipment.

The three different low contrast sections provide contrasts between 3 Hounsfield Units and 200 HU to account for the large variation in low contrast capabilities.

Spatial resolution bar patterns range from 4 to 30 lp/cm and an additional edge insert allows to assess the system MTF in different orientations.

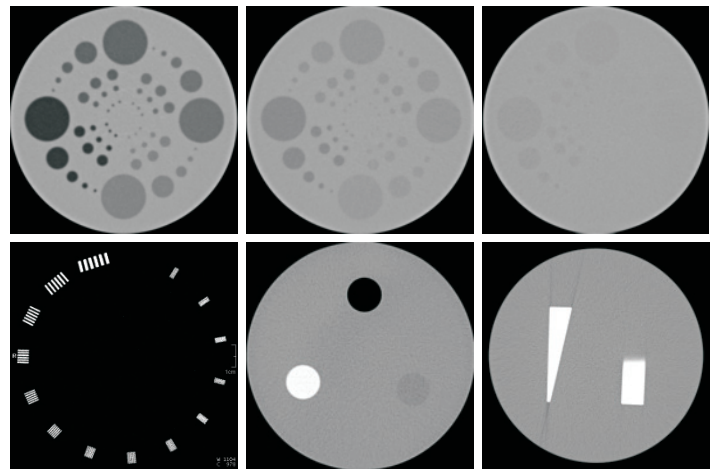
The image contrast and HU-scale section helps to quantify the machines Hounsfield scale and the bone contrast achieved with different settings.

The ConeBeam Phantom is essential to fully quantify the imaging performance of such scanners and to compare different products or technical solutions.

In addition to the overall image quality of cone-beam scanners, the associated dose should be measured using CT dosimetry phantoms (please see our dose phantoms on [www.qrm.de](http://www.qrm.de)). The CT Dose Index (CTDI) methodology can be applied to all types of cone-beam scanners.



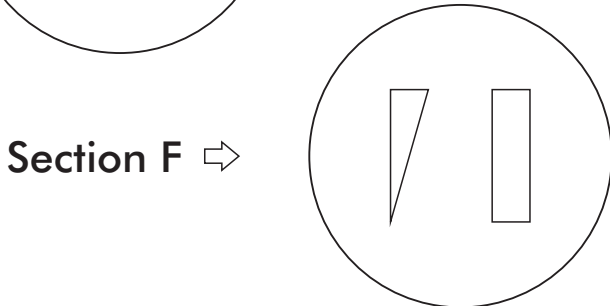
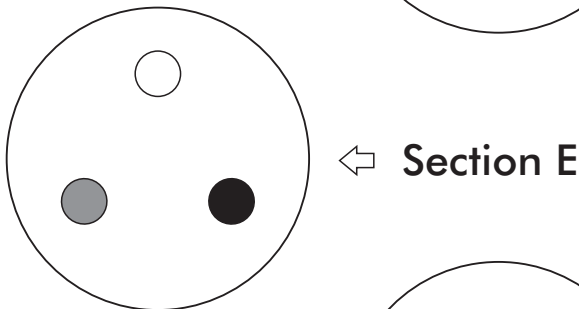
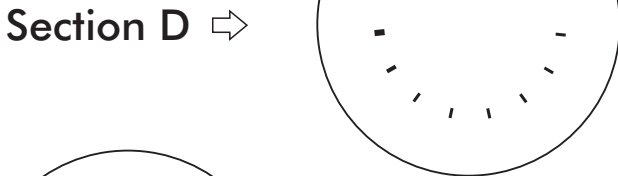
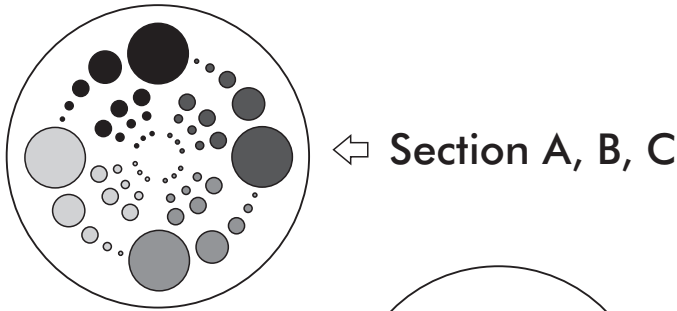
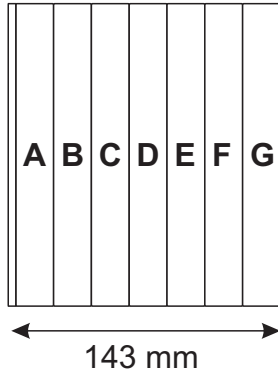
The QRM-ConeBeam-Phantom



Axial CT-images of the different sections of the ConeBeam phantom



# ConeBeam Phantom



## Specifications

Overall dimensions:

Diameter (xy): ..... 160 mm

Height (z): ..... 143 mm

Section height: ..... 20 mm

Phantom body: ..... tissue equivalent (at 120 kVp)

## The phantom body comprises 7 sections:

### Section A, B, C - Contrast resolution

Sect. A: contrast steps -60, -90, -120, -200 HU

Sect. B: contrast steps -20, -25, -30, -45 HU

Sect. C: contrast steps -3, -5, -10, -15 HU

Inserts diameter in steps of 2, 4, 8, 16 and 32 mm respectively.

### Section D - Spatial resolution

14 circular aligned line patterns varying from 4 to 30 lp / cm

### Section E - Noise & scaling

3 inserts (D = 24 mm) providing bone equivalent material (400 mg CaHA / ccm), water equivalent (CTWATER<sup>®</sup>) and air.

### Section F - MTF edges

Two PTFE wedges perpendicularly aligned for evaluating the MTF in different orientations.

### Section G - Plain

Optional custom-made adapter for individual mounting

**References:** [1] Gupta R, Grasruck M, Suess C, et al.

Ultra-high resolution flat-panel volume CT: fundamental principles, design architecture, and system characterization. Eur Radiol. 2006;16:1191-205.