QRM A PTW COMPANY

D100

QRM-DEP-V2

Dual Energy Phantom V2

The phantom is specially designed for dual energy (DE) purposes and can be used for quality assurance, scanner performance and evaluation of different DE post-processing techniques.

Research in computed tomography is currently focused on using dual energy to distinguish between different tissues on CT images.

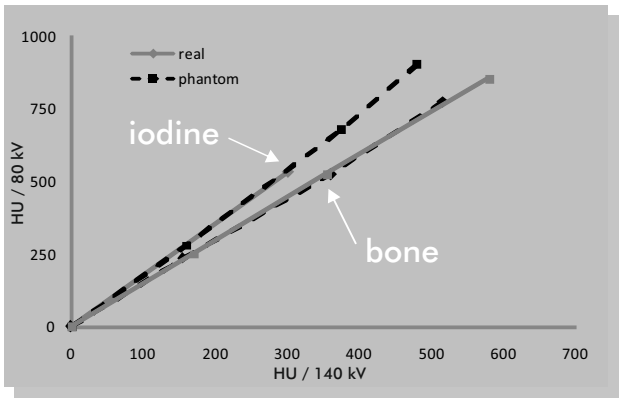
The DEP-V2 is the first phantom providing the opportunity to test CT-scanner performance and to evaluate different DE post processing techniques.

Therefore the phantom provides different virtual non-contrast lesions.

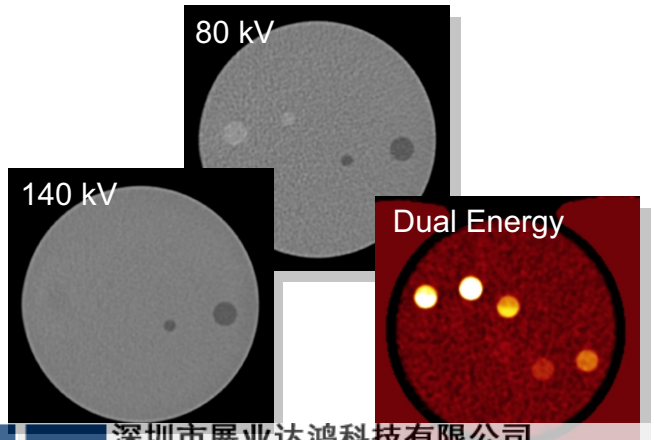
The different cylindrical lesions consists of Ca^{++} or iodine. For example, in the CT-images some lesion's CT-values (HU) can be detected as equal to the surrounding material at one energy (e.g. 120 kV) and with a contrast at other energies (e.g. 80 / 140 kV).

The DEP-V2 fits to our additionally available thorax phantom. Extension rings, to simulate obese patients are available, as well.

Dual Energy Phantom with additionally available QRM-Thorax



The graph shows the excellent correlation between real and phantom material [1].



Specifications

Phantom diameter ..... 100 mm
Phantom length ..... 100 mm
Phantom weight ..... 0.9 kg

Material ..... CTWater® (0 HU @ 80 - 120 kV)
CTIodine® (solid iodine)
CaHA (Ca^{++})

QRM GmbH Baiersdorfer Str. 22
91096 Moehrendorf Germany

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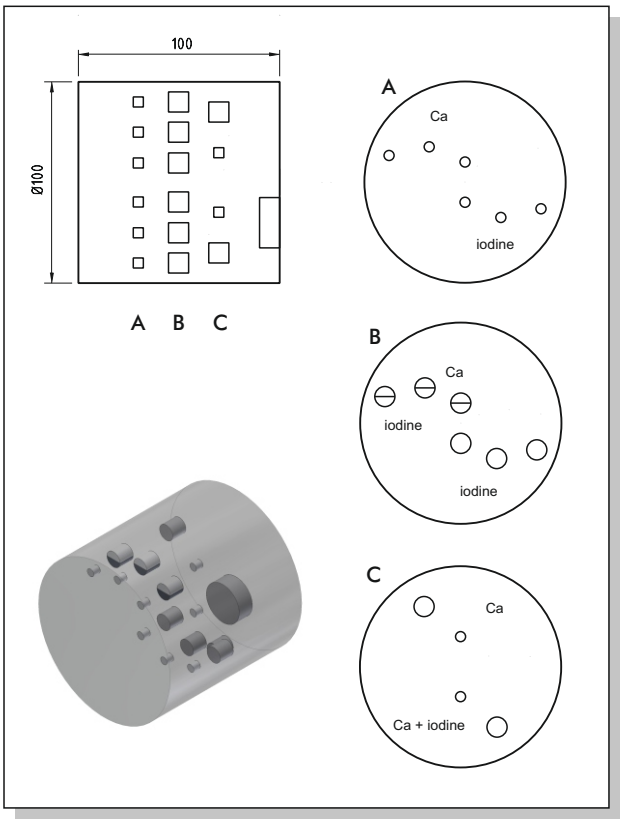
Dual Energy Phantom



Schematic view of the DE-Phantom V2

Specifications of lesions

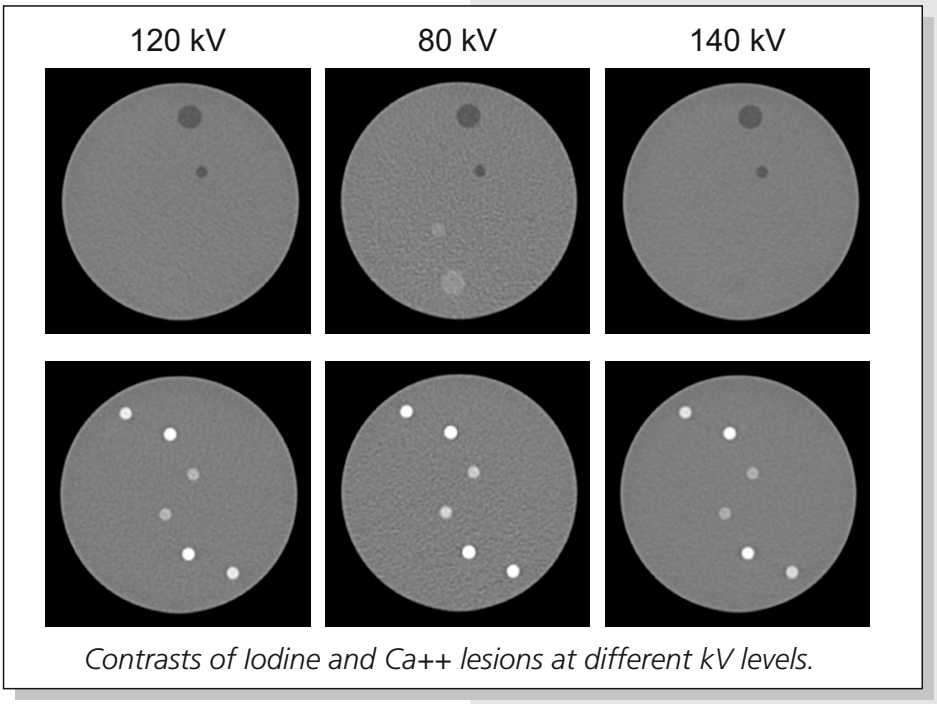
Dimensions of the cylindrical inserts:
8 lesions .....10 x 10 mm
8 lesions .....5 x 5 mm
1 calibration cylinder ...25 x 10 mm

CT-values (HU) valid for 120 kV (± 5 HU)*:
Phantom body ..... 0 HU at 80 - 140 kV

Layer A: Ca^{++} (200 HU, 400 HU, 590 HU)
Iodine (200 HU, 400 HU, 590 HU)
Layer B: Half cylinder:
Ca^{++} (200 HU, 400 HU, 590 HU)
Iodine (200 HU, 400 HU, 590 HU)
Full cylinder:
Iodine (25 HU, 50 HU, 100 HU)
Layer C: Ca^{++} (-140 HU, -140 HU)
Ca^{++} + Iodine (0 HU, 0 HU)

Calibration cylinder (0 HU at 80 - 140 kV)

*specified values. Eff. values can vary due to manufacturing method and imaging device!



Contrasts of Iodine and Ca++ lesions at different kV levels.

References: [1] Schmidt B, Sedlmair M, et al. Assessment of a Quality Assurance Phantom for Dual Energy CT 2009, in Proceedings of Radiological Society of North America (RSNA) 95th Scientific Assembly and Annual Meeting, Chicago.

QRM GmbH Baiersdorfer Str. 22
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