

phantomx

HEAD & NECK PHANTOM – CTA AVM / LESION

Age Category: **Adult**

Body Region: **Head**

Target Modality: **CT**

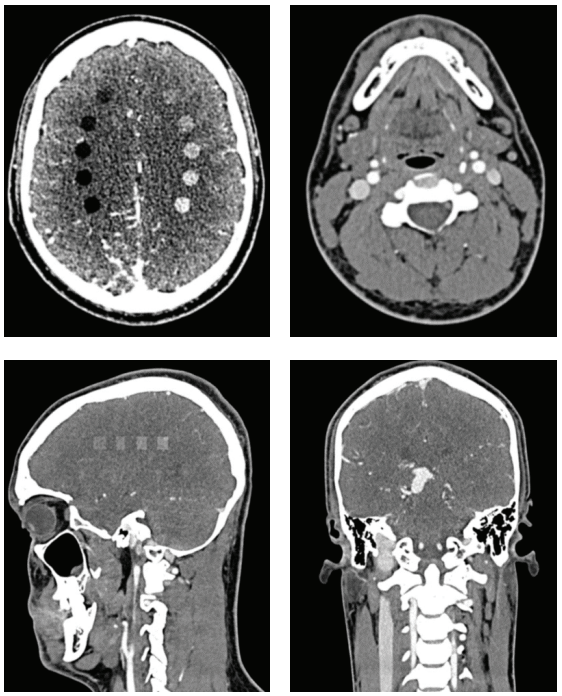
Diagnostic Features: AVM, Low-contrast lesions

This phantom simulates a contrast medium enhanced head in arterial phase (CT angiography). It covers the vertex to the fifth cervical vertebra.

The phantom has 10 low-contrast lesions in the centrum semiovale and the right hemisphere has an arteriovenous malformation.

The phantom can be used in CT (including CBCT) to evaluate and optimize imaging performance and AI-enabled diagnosis. It is also suited for training purposes.

The phantom provides a detailed and realistic simulation of vascular structures, soft and bone tissue, including small details such as lymph nodes. Air voids are filled with a cellulose-polymer composite of approx. -160 HU.



Head & Neck Phantom – CTA AVM / Lesion

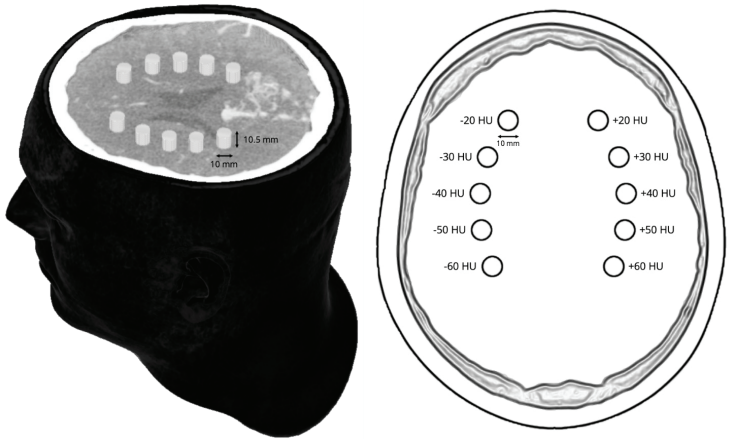
Diagnostic features

- Realistic simulation of head vessels, bone and soft tissues.
- Arteriovenous malformation of the right hemisphere.
- 5 rod-shaped lesions on each side in the centrum semiovale at the periventricular and supraventricular level.

Specifications

Size	Approx. 186 x 224 x 269 mm 7.3 × 8.8 × 10.6 in
Weight	Approx. 5120 g 11.3 lb
Base material	Cellulose-polymer composite
Optimal tube voltage	120 kVp [cf page 3] - adaptable upon request -
Lesion diameter:	10 mm
Lesion height:	10.5 mm
Nominal lesion contrasts*:	Approx.-60 to -20 and 20 to 60 HU at 120 kVp

*cf. see charts for measurement of lesion contrast.



General indications

- The phantom is made of a cellulose-polymer composite material with properties similar to hardwood. If handled carefully, it will last a long time.
- The phantom is coated with a protective layer. If the protective layer is undamaged, the phantom can be cleaned using a damp cloth (water or mild detergent).
- Protect from direct sunlight.
- Maintain a storage temperature of 10 °C to 30 °C. If the phantom is exposed to temperatures below -10 °C or above 45 °C, it can be severely damaged.
- The phantom is not equipped for dose measurements with dosimeters and it is not suited for material characterization with dual energy CT.
- The phantom is not certified as medical device.
- Air voids are filled with cellulose-polymer composite of pprox. -160 HU.
- Handle with care to prevent injury or damage.
- If external damage is observed, it is recommended to consult PhantomX.

Lesion contrast

Lesion contrast can vary based on protocol settings, including dose and reconstruction algorithm, as well as the chosen measurement method.

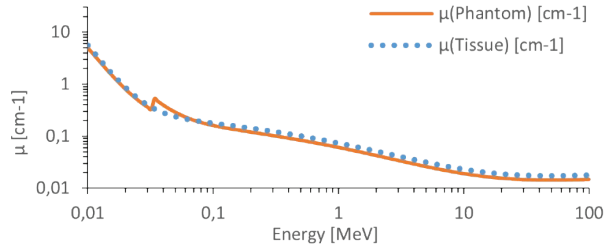
To measure lesion contrast, it is recommended to define volumes of interest (VOIs) that encompass most of the lesion and adjacent tissue. Edges of the lesion should be avoided, and measurements should be averaged across multiple scans to improve reliability, given the inherent noisiness of low-contrast measurements.

The VOI should cover at least one-third of the lesion volume, and the VOI for adjacent tissue should be equal to or larger than the lesion volume.

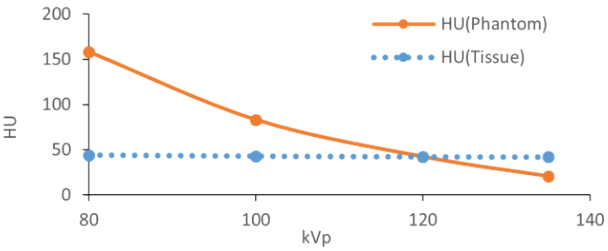
Attenuation Properties

Soft Tissue

Linear attenuation coefficients [cm-1] (calculated)

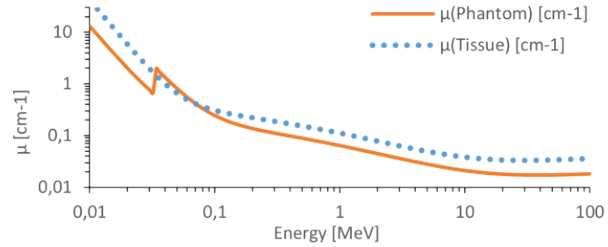


Hounsfield units (calculated)

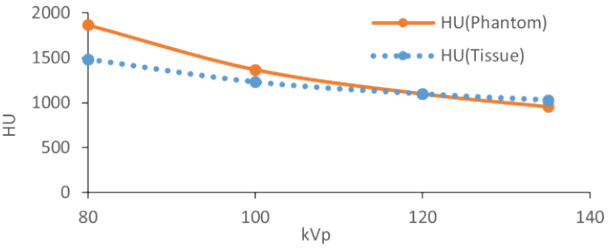


Bone Tissue

Linear attenuation coefficients [cm-1] (calculated)



Hounsfield units (calculated)



Tissue Reference: Woodard HQ, White DR. The composition of body tissues. Br J Radiol. 1986.

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