

Lung Cancer Screening CT Phantom LSCT 001

Chest phantom for standardization studies in low dose lung cancer CT screening.



As the screening is usually done on healthy people, the necessity of minimizing the exposure while maximizing the image quality is considered to be particularly high.

The phantom is designed to set conditions for detection of small early lung cancers such as GGA, which are difficult to be found by plain X-ray.

Anthropomorphic structure of the phantom provides life-like images allowing operators visual evaluation. Quantitative evaluation on radiation dose and density curve of the image can be done stimulatory with a single scanning.

LSCT001 is a unique phantom dedicated for optimizing lung cancer CT screening conditions, as well as setting the standard conditions between multiple equipment or facilities for mass screening.

Original human tissue substitute material creates life-like artifact under CT scanning.

Simulated GGA type tumors with different sizes and HU numbers are prepared in the vicinity of three main sections of bilateral lungs.

Dose meter holder on the central axis of the phantom allows housing a pencil type ion chamber.

8-step cylindrical linearity phantom to control density curve as a scale can be attached to the chest phantom base.



LSCT 001 with ion chamber



Specifications

Set Includes:

1 chest Phantom: life size torso with arm up position

Internal structures:

bones

simulated tumors at three lung areas

apical portion of the lungs

bifurcation of the trachea

base of lungs

dose meter hole

(13 mm / 0.5 inch dia., on the central axis of the phantom)

1 8 step linearity phantom

8 steps of 30mm / 1.2 inch dia. density samples are embedded

1 adjustment base

Size:

chest Phantom

measurement around
the chest 93 cm / 36.6
inch

height 45 cm / 17.7 inch
weight 18 kg / 40 lb.

linearity phantom

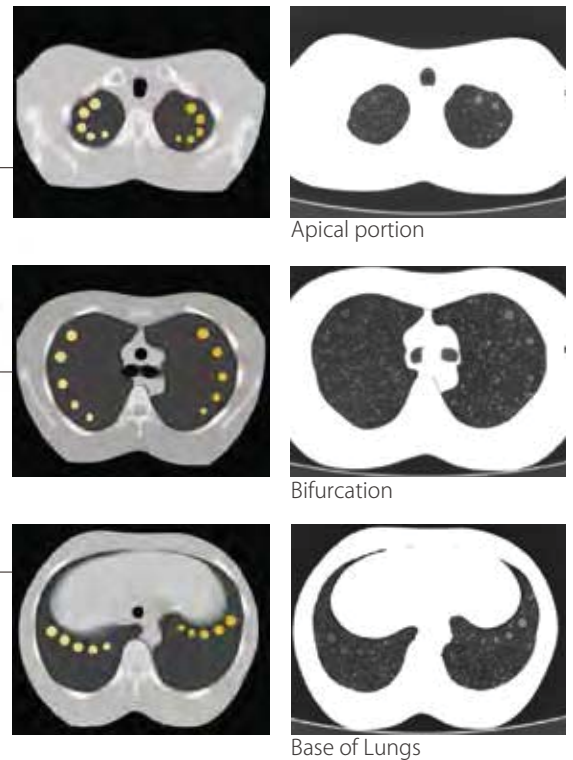
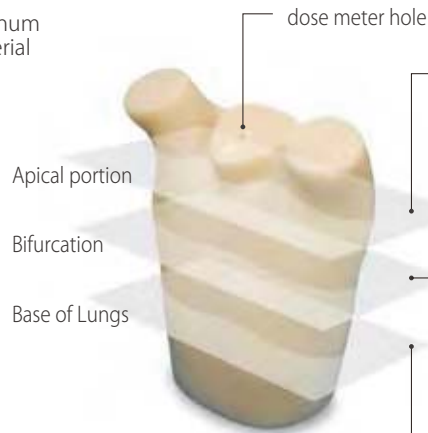
diameter 20cm / 7.88 inch
height 10cm / 3.95 inch

Torso phantom

Chest phantom walls and mediastinum
Human soft tissue substitute material

Bones
Human bone substitute material
(epoxy based synthetic bone)

Lung background
Polystyrene foam
HU# -900



Simulated GGA type tumors with different sizes and HU numbers are embedded in the vicinity of the apical section, the bifurcation and base of the lungs.

* The simulated tumors at each site are not exactly on the same plane.

Simulated tumors

	HU contrast with the lung back ground	size	materials
tumors in the right lung	Δ HU=100	4, 6, 8, 10, 12 mm dia. 0.16, 0.24, 0.32, 0.47 inch dia.	urethane resin
tumors in the left lung	Δ HU=270	2, 4, 6, 8, 10 mm dia. 0.08, 0.16, 0.24, 0.32, 0.39 inch dia.	urethane resin

Linearity Phantom

Linearity phantom back ground

Urethane resin
HU# 60

Linearity phantom targets

A	HU#	materials
B	-1000	air
C	-850	polyurethane
D	-600	polyurethane
E	-400	polyurethane
F	-200	polyurethane
G	100	polycarbonate
H	250	Bakelite
	350	polyacetal resin



* Linearity phantom can also be ordered separately.