

SPECT/PET Performance Phantom

Features

- For testing photon emission CT systems
- Measures resolution, linearity and uniformity
- Provides “hot” and “cold” simulated lesions



Photon emission computed tomography (PET/SPECT) systems, like any imaging apparatus, require periodic performance testing. This phantom is designed to provide the data for such evaluations.

It offers a single system for measuring resolution, linearity and uniformity.

All components of the phantom fit into an optional, clear acrylic source tank which can be filled with a ^{99m}Tc -and-water solution similar to that used for routine flood uniformity testing.

Also Available, an optional set of three inserts includes two for resolution (one with “cold” lesions in a “hot” field and one with “hot” lesions in a “cold” field) and one for linearity/uniformity measurements. The visibility of all lesions can be varied by adjusting the concentration of radioisotope in the tank.

Specifications

Source Tank Made of acrylic, 8.5 inch OD x 8 inch ID x 12 inch long. Resealable, with fill and drain ports. Provides background activity when filled with the desired ^{99m}Tc -and-water solution and includes support blocks

“Cold” Lesion Insert 7.88 inch OD x 3 inch thick. Contains seven plastic rods; each is nominally 25% larger than the next smaller size. Rod diameters are 5.9, 7.3, 9.2, 11.4, 14.3, 17.9 and 22.3 mm. Plastic spheres of the same diameters mounted on metal rods, (supplied) can be attached to this insert. The rods and spheres displace the radioactive solution in the source tank, thereby creating “cold” lesions. Exponential size gradations allow quantitative resolution measurements

Linearity/Uniformity Insert 7.88 inch OD x 2 inch thick. Has a crossed grid of cutout channels in an acrylic block. Scan should show these channels with zero curvature and uniform intensity

“Hot” Lesion Insert 7.88 inch OD x 2.5 inch thick. Contains eight pairs of holes drilled through a solid acrylic block. Hole diameters are 4.7, 5.9, 7.3, 9.2, 11.4, 14.3, 17.9 and 22.3 mm. The diameter of each pair increases nominally by 25% over that of the preceding pair. The solid block creates a “cold” field in which the solution-filled holes appear as “hot” lesions

Weight 15 lb (6.8 kg)

76-823 PET/SPECT Phantom Source Tank

76-824 PET/SPECT Phantom Inserts, set of three

76-825 PET/SPECT Cardiac Insert

** Designed and developed by Ray A. Carlson, Hutzel Hospital, Detroit, MI, and Jeffrey T. Colvin, Texas Oncology PA, Dallas TX. Manufactured by Fluke Biomedical.*

SPECT/PET Performance Phantom Cardiac Insert

- Provides a multifunction simulation of the heart
- Can be used with various activity levels
- Insert can be swiveled a full 360°
- Provides for “body background” radioactivity



The PET/SPECT Cardiac Insert is used with the PET/SPECT Performance Phantom Source Tank (Model 76-823) to mimic the human heart for myocardial perfusion.

The “heart” is approximately 8 cm in diameter by 8 cm high, and has a 1.5 cm thick hollow “wall” which may be filled with a solution containing Thallium-201, or any other desired isotope. The insert is then placed within the source tank, and the tank can be filled with a less concentrated radioactive “background” solution.

The PET/SPECT Cardiac Insert is supported on plastic rods, to allow the entire unit to swivel a full 360°, or be rotated to any desired angle, assuming any desired position or attitude.

Specifications

Material Acrylic

Construction Sections are sealed with “O” rings for leak proof assembly

Dimensions 8 inch Ø x 6 to 10 in (h) (variable with position of heart)

Weight 3 lb (1.4 kg)

76-825 SPECT/PET Cardiac Insert