

**Gammex[®] Lung CT Reference Phantom
Model 621
User's Guide**



The Gammex Lung CT Reference Phantom is a simple to use device that will provide a CT number reference in the range of common lung disorders. It consists of an acrylic shell that houses four reference sections. Each section is comprised of a specific density material that, when scanned, will yield a CT number unique to that section. The four densities used in this phantom are 96 kg/m^3 , 160 kg/m^3 , 240 kg/m^3 and 320 kg/m^3 . The corresponding nominal CT numbers are -912, -851, -775 and -700.

The phantom is intended to be used as a CT number reference that is a constant so that any systematic errors due to scanner parameters changing or the use of different scanners on the same patient during a longitudinal study may be detected and corrected. To accomplish this, it is suggested that the phantom be scanned with the patient each time the patient is scanned. The phantom shape and material is such that it will not cause artifacts in the image. It is possible to place the phantom on top of the supine patient during the exam if so desired.

After the phantom has been scanned a region-of-interest (ROI) should be created in the center of each section of the phantom. Each ROI should encompass at least 50 mm^3 of the material. If the slice thickness used for the scan was 1 mm the diameter of ROI should be at least 16 mm yielding an area of 50 mm^2 and a volume of 50 mm^3 . This assures that there is enough data to maintain a consistent result over multiple trials. The output of the ROI's of the first scan should be stored for use in subsequent studies. If it is found that the CT numbers in the next exam have changed, it can be assumed that the CT numbers of the patient's lung tissue have changed by the same amount and a correction can be applied. This is equally valid if the same scanner or different scanners are used for the same patient.