

TITLE: Application of Square Wave Response Function (SWRF) Measurements for Measurements Automated Analysis of SPECT Spatial Resolution Measurements.

PURPOSE: To perform SWRF measurements using the high contrast resolution gauge in the SpecPhan phantom for quantification of spatial resolution in single photon emission computed tomography (SPECT) imaging.

METHOD/MATERIALS: This investigation will evaluate spatial resolution of a SPECT system using the SWRF method as an alternative to the modulation transfer function (MTF) of the point spread function (PSF). The SpecPhan phantom contains high contrast resolution gauges with spacing of 2 mm, 4 mm, 6 mm, 8 mm in the axial orientation. This section of the phantom offers a visual determination of spatial resolution in addition to the PSF sections with and without scatter. The position of these gauges will allow measurements in the sagittal orientation as well. This same pattern can be used to apply a SWRF determination from the numerical data in the SWRF pattern. Likewise published methods reveal how to intercompare SWRF and MTF approaches.

CONCLUSIONS: The implementation of the SWRF can be used as an alternative to the MTF of the PSF for spatial resolution evaluation of a SPECT imaging system.