

ABSTRACT

Computed Tomography Scanner (CT scan) is a medical imaging modality in radiology that uses X-rays to form an image. In the process of image formation, noise is possible. The development of noise evaluation is noise inhomogeneity. Noise inhomogeneity is used to measure the inhomogeneity of noise against homogeneous objects. The most influential factor in noise formation is the exposure factor. To comprehensively examine this influence, this research is needed. The purpose of this study is to compare the noise inhomogeneity values of various scanner vendors, analyze the influence of FOV and tube current (mA) on noise inhomogeneity. Research on the measurement of noise inhomogeneity uses CT scan modalities from various types of vendor variations namely GE, Hitachi, Toshiba, Philips, and Siemens. The image used is the third module image of American College of Radiology (ACR) Phantom 464 obtained from BPAFK Surakarta. This measurement involved IndoQCT v24b software with an automated method. The results of the noise inhomogeneity measurement were processed with OriginLab in the form of boxplots. The analysis was done by comparing boxplots between groups. The results of this study show that the highest noise inhomogeneity value is found in Toshiba vendors with a mean noise inhomogeneity of 10.54 HU and the lowest mean noise inhomogeneity is Siemens at 1.73 HU. Meanwhile, noise inhomogeneity is independent of FOV and tube current (mA) parameters.

Keywords : *CT scan, noise, noise inhomogeneity, Vendor scanner, American College of Radiology Phantom.*