

ABSTRACT

CT scan is a medical imaging modality that utilizes x-ray beams to obtain information in the patient's body in the form of radiation attenuation information. CT scan images can be formed by applying image reconstruction algorithms to convert attenuation data into an image. CT scan modalities have a variety of specifications, one of which is in terms of the number of detector rows. The detector row plays a role in the appearance of quantum noise and electronic noise. To explore the correlation between noise and detector row variation, research is needed that discusses the relationship between these two things. This research aims to obtain the relationship between the number of detector rows to noise level and noise uniformity. Measurements of noise level and noise uniformity were performed using the automatic method in IndoQCT v24b. The measurements in this study involved 52 images from the third module of ACR 464 phantom obtained from the Uji Kesesuaian team of BPAFK Surakarta where each image used a scanner with different variations in the number of detector rows namely 2, 4, 8, 16, 32, 64, and 128 rows. The noise level and noise uniformity values that will be correlated with the number of detector rows are the noise values that have been converted to their exposure factors. After taking measurements with IndoQCT v24b. Furthermore, the results were analyzed for their relationship to the number of detector rows. The correlation results show that there is no direct relationship between the increase in the number of detector rows with noise level and noise uniformity. Many other factors that have not been fixed interfere with the relationship between detector rows and noise. However, the correlation between the number of detector rows and noise level shows a box shape that expands as the number of detector rows increases.

Keywords: *noise, noise level, noise uniformity, multidetector row CT, detector, and detector row*