

## **ABSTRACT**

*The assessment of image quality from the Computed Tomography (CT) modality has been quantitatively only seen from the CT number value and the magnitude of the CT number value deviation (noise) and has not been able to explain other things such as the distribution of CT number values in the image. This study aims to see the effect of ASIR level variations in describing the characteristics of the image histogram from the distribution of CT number values. The research was conducted using the AAPM 610 phantom using ASIR 50 and 100 mA. The values on the resulting histogram can be calculated in the form of first-order characteristic parameters, including CT number, skewness, noise, kurtosis, and entropy. Using ASIR variations of FBP (0% ASIR), using 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, and 100% ASIR. The characteristic extraction process was carried out with IndoQCT software by taking ROI (Region of Interest) on a homogeneous area and forming a histogram and calculating the histogram parameters from the image. Generates a graph showing the distribution of values of various parameters on the image histogram. The result value of the average CT number parameter increased in accordance with the increase in ASIR level with fluctuations in ASIR of 50 mA and 100 mA. With the average value of CT number of -3.18 HU (Hounsfield Unit) and -3.02 HU, respectively. In the noise parameter, the value of ASIR 50 mA decreased every increase in ASIR level with an average noise value of 5.7 HU while ASIR 100 mA was 4.1 HU which also decreased. The kurtosis parameters had almost the same average values at 50 mA and 100 mA ASIR of 2.90 and 3.04. Meanwhile, the skewness parameter gives a tendency to negative results, this indicates the presence of a distribution concentration on the right side of the mean value and the presence of extreme values on the left side of the histogram. In addition, the entropy parameter shows complexity in the distribution with values that always decrease as the ASIR level increases and this occurs at ASIR 50 mA and 100 mA. Therefore, these parameters can be used to assess the characteristics of the image based on the ASIR level used.*

**Keywords** : CT number, Noise, Histogram Characteristics, ASIR, Kurtosis, Skewness, Entropy.