

ABSTRACT

Image quality in CT depends on several parameters, one of which is slice thickness. Slice profile quality index (SPQI) is used to measure how far a profile line approaches the ideal value of 100%, which represents an ideal rectangular shape. This study was conducted with the aim of characterizing the relationship between SPQI values and variations in slice thickness and pitch on the CT Simulator using the Catphan 503 Fantom. The Catphan 503 phantom image uses the CTP404 module, which can measure the sensitometry and geometry of the CT system, including slice thickness. The results of the analyzed image are wire ramp objects then in the Region of Interest (ROI) with IndoQCT software, after which the SPQI value is averaged. The SPQI value results in a trend from the evaluation results on the slice thickness variation, that the greater the slice thickness, the greater the SPQI value, and FWHM produces the width of the intensity. The smaller the slice thickness, the smaller the SPQI value compared to the large slice thickness, and the FWHM produces a less wide intensity width, while in the pitch variation the SPQI value decreases when the pitch rises, then the object details cause greater noise along with a small slice thickness, otherwise the SPQI is large when the pitch rises, the object details cause less noise, and the image quality is good with a large slice thickness. The SPQI measurement for slice thickness and pitch variations is shown by the SPQI percentage value, which is in the range of 78-83%. The highest average SPQI measurement result is at pitch 0.562 with a slice thickness of 10 mm at 83.87%, and the lowest is at pitch 0.938 with a slice thickness of 3.75 mm at 78.59%. The SPQI value in the variation of slice thickness and pitch produces a value below the ideal value of 100%, which represents a rectangular shape because there is blur in the profile that causes noise.

Keywords : *Slice profile Quality Index (SPQI), Computed tomography, slice thickness, pitch, Catphan 503 phantom*