

ABSTRACT

Radiotherapy using the Linear Accelerator aircraft requires stable radiation beam quality to ensure dose accuracy and patient safety. One of the important parameters in quality control is the stability of the photon beam profile which reflects the uniformity of the dose distribution in the irradiation field. This research refers to the International Atomic Energy Agency (IAEA) Technical Report Series (TRS) no.398 guidelines. The research method was carried out through the measurement of the photon beam profile using water phantom with a field area size of 10x10 cm at 5 different points by analysis the absorption dose, flatness and symmetry parameters of the file. The results of the absorption dose measurement were obtained $100.61 \text{ cGy/MU} \pm 1.35\%$ and the tolerance limit was 3%, the file flatness was obtained a value of $2.20 \pm 0.89\%$ and the tolerance limit was 2% and the file symmetry was obtained a value of $1.27 \pm 0.33\%$ and the tolerance was 2%. The measurement results show that the profile value of the photon beam is within the permissible tolerance limit. In conclusion, the Linear Accelerator aircraft tested met the criteria for file profile stability and was suitable for safe and accurate clinical radiotherapy services.

Keyword: *radiotherapy, Linear Accelerator, file profile, quality control*