

**INTERNAL QUALITY ASSURANCE OF MSCT GE OPTIMA520 16 SLICE  
AT RADIOLOGY UNIT: STUDY ON RING ARTEFACT**

**ABSTRACT**

*The presence of artifacts in CT images can interfere with diagnostic processes, as artifacts represent structures or patterns in the image that do not originate from the actual object being scanned (IAEA, 2012). An artifact found in the CT scanner GE Optima520 16-slice's diagnostic images of a patient, later identified as a ring artifact. According to the IAEA's recommendations in Human Health Series No. 19 (2012), performing air calibration (fast calibration) is necessary to prevent the occurrence of ring artifacts. Following the fast calibration, the next step taken by the medical physicist was to carry out internal quality assurance, based on conformity testing parameters previously established by BAPETEN. A more effective approach to detecting artifacts or abnormalities in CT scanners is also expected as part of the role of the medical physicist in the hospital. Internal quality assurance has been conducted on radiation output parameters and CT number measurements. The results indicate that the CT scanner is in a reliable condition according to BAPETEN Regulation Number 2 of 2022. A comparison was also made between the uniformity test as outlined in the BAPETEN regulation and a CT number homogeneity test. Based on the findings, the homogeneity test was better able to demonstrate the presence of ring artifacts through a higher inhomogeneity value.*

*Keywords: MSCT GE Optima520 16-slice, quality assurance, radiation output, CT number, uniformity test, homogeneity test, water phantom.*