

## ASSESSMENT OF PERFORMANCE OF A NEW DIGITAL IMAGE INTENSIFIER FLUOROSCOPY SYSTEM

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This work is aimed on assessment of the physical parameters including image quality and patient dose rates on a recently installed digital fluoroscopy unit. The Digital Fluoroscopy is new for Bulgaria and there is a gap in the experience within the radiologists in exploring the advantages of this modality for imaging. At the same time in Bulgaria Quality Assurance protocols in Digital Fluoroscopy does not exist and based on the findings obtained some initial recommendations are prepared. The purpose of these efforts is to propose optimization strategies for digital fluoroscopy of maintaining good diagnostic image quality at minimal patient doses. The modern fluoroscopy units are often automated and software controlled. In this work various user defined and automated modes were examined on a Axiom Iconos R200 unit (Siemens, Germany) as respected image quality parameters and patient doses were measured. Low and high contrast resolution were assessed for different field sizes and fluoro modes using Leeds type test objects. The Incident Dose rates was measured using standard 30x30 cm PMMA phantom with thickness varying between 16 and 30 cm at different available filtrations, automatic brightness control curves, and pulsed fluoroscopy modes. The Incident Dose Rate (without backscatter) measured on 20 cm PMAA and largest field of view was from 2.9 to 4.0 mGy.min<sup>-1</sup> for the different dose modes available. The low contrast sensitivity varied from 1.3 to 1.8 %, as the limiting spatial resolution is changing from 1.6 to 2.8 ln.mm<sup>-1</sup> for the available magnification and dose modes. The system showed a big potential for performance optimisation in terms of image quality and dose. It completely satisfies Quality Control requirements applicable for conventional Image Intensifier systems. The results obtained can be used in two main directions - development of better optimised local practice standards and development of a quality control programme relevant to digital fluoroscopy systems.

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