

Evaluation of the voltage quantities measured with different noninvasive meters for quality control at a Calibration Laboratory

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In this work the peak kilovoltage (kVp), practical peak voltage (PPV) and air kerma were measured with a noninvasive Radcal Accu-kV Diagnostic SensorTM model 40X12-W meter, and the results were compared with the ones taken with a PTW meter, DiavoltTM model. This type of comparison is very important to ensure the quality control at Calibration Laboratory of IPEN/CNEN-SP. The tests were performed with an X-ray system Pantak/Seifert, tube model MXR-160/22 (constant potential) of the Calibration Laboratory of IPEN operated in the diagnostic radiology radiation quality RQR5 (70kV) with total filtration of 2.8mmAl. The measurements were taken varying the electric current and the distance between the focal spot and the meters. The uncertainties attributed to the quantity of dose, kVp and PPV for a non invasive method did not exceed 5%, and therefore were within the IAEA recommendations (Technical Report Series No. 457, 2007). In the corresponding measurements, increasing the distance between the focal point and the meter, the dose should exponentially decrease while the PPV and the kVp should be constant. The results were within the predictions, and the PPV and the kVp presented a variation of less than 1.5%. This type of quality control procedure is very important to verify the good reliability of the X-ray system used at the Calibration Laboratory, because this system is used for routine calibration of dosimeters.

TRS 2007, *Dosimetry in diagnostic radiology: an international code of practice*, TRS 457, Technical Report Series No. 457, IAEA, Vienna.

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Schedule and Abstract Book

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