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Commissioning of two Sensus SRT-100 50 - 100 kV X-ray unit for skin cancer treatment

This study provides dosimetric data from the commissioning of two Sensus SRT-100 50–100 kV X-ray units. Data collected during the commissioning process included: a) HVL, b) output (dose rate), c) applicator cone factors, and d) profiles. Percentages depth dose were not measured due to lack of resources. Farmer-type chambers (iba-FC65-G), and a thin-window parallel plate ion chamber (PTW-N23342) were used for HVL measurements. Dose rate measurements were made with two thin-window parallel plate ion chamber (PTW-N23342). Dose profiles were measured with EBT3 GafChromic film. The average HVL values for 50, 70, and 100 kV of the two treatment units were found to be 0.52, 1.13, and 2.03 mm Al, respectively when plane parallel chamber were used and 0.55, 1,16 and 1,98 mm Al for farmer types. The HVL's were 2.4%–5% lower when measured with the Farmer chamber, as compared to measurements with the parallel plate chamber, for energies of 50 and 70 kV, that differs to Sheu et all. Dose rates were measured for 50, 70 and 100kV at 15 and 25 cm SSD. The dose rate variation for two units was below 2 %. Applicator factors deviation were also below 2 %. The dose profiles for the 5 cm applicator were nonuniform, especially in the cathode–anode direction. The data obtained shows good stability for this type of machine and the necessity of redundant verification.

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