

AbstractID: 8687 Title: Comparison of the Epson Perfection V700 Photo flatbed and the Vidar VXR-16 Dosimetry PRO AdvantageTM film scanners for use with radiochromic film

Purpose: The purpose of this study was to compare the performance and utility of a commercially available flatbed scanner with that of a widely-used medical film scanner for use with radiochromic film. **Methods & Materials:** This project compares the Vidar VXR Dosimetry Pro and the Epson Perfection V700 Photo flatbed scanner. Using radiochromic EBT film irradiated to a known range of doses 0-512 cGy using eight 3x3 cm fields on a single film, both scanners were characterized for scan repeatability, orientation effects, uniformity, and scanner noise. RIT V5.0 was used to determine pixel value (PV) of Vidar scans, while ImageJ software was used for the Epson scans. **Results:** For the range of doses measured, average pixel values of a central 1.5x1.5 cm region of interest (ROI) were reproducible within 0.1% standard deviation with Vidar and approximately 0.2% with Epson. Epson mean PV differed by up to 18% for all dosed regions from landscape to portrait orientation, while only up to 5% for Vidar. From 0 to 512 cGy, identical films showed a 10% wider PV range for Vidar than Epson. Scanner noise was minimal; Epson showed a maximum SD of 1.00% from the mean of the central ROI, Vidar showed 1.14%. In both systems, cross profiles for an unirradiated film showed deviations in PV no more than 2% of the mean. **Conclusions:** No clear significant accuracy advantage was noted in either system, provided the leading and trailing 1 cm film edges were neglected with the Vidar system. Although the Epson scanner is a relatively inexpensive method for analyzing radiochromic film, the lack of commercially available software for it could be a major disadvantage. Hence, an institution already having a Vidar system may find its use with radiochromic film attractive.