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Commissioning Enhanced Dynamic Wedges Utilizing Mapcheck Device and Comparing with Film and Ion chamber Measurements.

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Varian Enhanced Dynamic Wedge (EDW) is a wedge technique which differs from the physical wedge in that no physical modifier is used to create a wedge dose profile. The wedge dose profile is created by the sweeping one of the Y jaw from open to closed position while other Y jaw and the X jaws stand still throughout the treatment. Because of the collimator motion, different parts of the field are exposed to the primary beam for different lengths of time.The motion of the jaw is controlled by a computer and the dose vs. collimator relationship to be followed in treatment mode is contained in a dose vs. jaw position table called Segmented Treatment Table (STT). The EDW provides wedge angles of 10°, 15°, 20°, 25°, 30°, 45° and 60° for both symmetric and asymmetric field sizes. EDW does not cause beam hardening and extra scatter to patients as compared to physical wedges. We measured the Wedge profiles using mapcheck device which contains 445 diodes in 2D array at various depths such as Dmax, 5cm, 10cm and 20cm. Dose profiles were also measured using EDR2 film and RIT software and 0.125cc ionization chamber. Profiles were compared with TPS generated profiles. We found in good agreement (<=4%) with Mapcheck device and film, ionchamber measurements and TPS calculations. We found that mapcheck device could be very useful and time saving for commissioning and QA of EDW wedges.