

AbstractID: 1210 Title: Routine quality assurance of enhanced dynamic wedges (EDW) using the RIT113 4.0 software

Varian linear accelerators are now routinely equipped with enhanced dynamic wedges (EDW). These wedges are generated electronically through the dynamic motion of an independent jaw (Y1 or Y2) within the treatment beam. Any dynamic motion in a linear accelerator clearly indicates the need for a frequent quality assurance of the system. The latest RIT113 (Version 4) Radiation Therapy Dosimetry Software, which is routinely used for IMRT quality assurance, has now been shown to be a very useful and an efficient tool for routine EDW quality assurance.

The RIT113 is calibrated for the energy and the linear accelerator. This calibration process is valid for IMRT verification as well. An XV film is placed in solid water at the d(max) of the energy in question with an SSD of 100 cm. With a field setting of 10 x 10 cm and typically 50 MU, the film is exposed in the dynamic wedge (for example EDW30) mode. The exposed film is processed and scanned using the VXR-16 Dosimetry Pro film digitizer. Based on the calibration curve provided, the film is analyzed by RIT113 and the wedge profile information provided as a two-dimensional plot. This plot is quickly compared to the specific wedge profile as generated under similar conditions on a phantom from the Eclipse external beam planning system. Initial results indicate the match to be quite good keeping in mind that the edges of the profile as obtained from the film are not as sharp as those from the theoretical plot.