AbstractID: 1439 Title: The dosimetric characteristics of the Kodak 2000RT CR system

The Kodak CR 2000RT system is routinely utilised as an imaging system for localising and verifying the patient position with the therapeutic 6MV photon beam used in radiation therapy treatment. Grey levels of the image are proportional to the photon and secondary electron fluences passing through the photostimulable phosphor plate. The dosimetric characteristics of this Kodak CR have been investigated and compared with measurements taken using Kodak XV film. The plate was placed inside of a lightweight EC-L therapy cassette containing a thin layer ($0.2g/cm^2$) of lead at the upstream of the beam path. This layer of lead acts as a buildup layer for generating the secondary electrons to the plate and as a filter for removing the unwanted scattered electrons and photons created by an upstream patient or phantom. Therefore, the attenuated primary photon fluence and the scattered electrons in the thin-layer of lead are the main contributors to the radiation in the plate. Without low energy scattered photons reaching the plate, the energy dependence due to the high Z barium fluorohalides, $BaFI:Eu^{2+}$, $BaFCl:Eu^{2+}$, and $BaFBr:Eu^{2+}$, was minimised. A good reproducibility was observed for this CR film dosimetry. Beam penumbra, flatness and symmetry defined in the TG45 report for the 20x20 cm^2 of 6MV and 18MV photon beams were investigated in comparison with measurements from the Kodak XV film. Sharper penumbra was observed as result of detecting primary photons only, with similar beam flatness and symmetry as measured by the XV film dosimetry.