Purpose: A newly introduced radiochromic film, the GAFCHROMIC EBT3, has been expected as much useful device for the IMRT dosimetry. The purpose of this study was to investigate the sensitivity and the uniformity of the films between an Epson ES-10000G flatbed scanner and a Vidar DosimetryPRO Advantage (Red) scanner.

Methods: Doses ranging from 1 cGy to 1600 cGy with 15-MV photon beam was irradiated to the film in a solid water phantom, respectively. All of the films were then digitized after irradiation using both two scanners. Sensitivities, local fluctuations of the film with two scanners were evaluated. Local fluctuations were defined as the relative (percent) standard deviation of the film response in ROIs (3 cm—3 cm).

Results: As to the Vidar scanner, the sensitivity of the film was higher for low dose range (below <400 cGy). While, as to the Epson scanner, the sensitivity using the red color channel was higher than others for low dose range. At high dose range (above >400 cGy), the green color channel had higher sensitivity than others. The Vidar scanner exhibited the lower local fluctuations than the Epson scanner for all dose ranges. For the Epson scanner, the red color channel had the lower local fluctuations than the green and blue color channel for all dose ranges.

Conclusions: This study shows the characteristics of the new EBT3 films, in conjunction with the Epson ES-10000G flatbed scanner and the Vidar DosimetryPRO Advantage (Red) scanner.