

**Purpose:**To investigate possibility of dose reduction for a newly developed indirect flat panel detector (FPD) system employing irradiation side sampling (ISS), physical imaging properties were measured and compared with those of a conventional computed radiography (CR) system.

**Method and Materials:**The FPD system employing ISS (CALNEO MT, Fuji Film) and the CR system (FCR PROTECT CS, Fuji Film) including the imaging plate (ST-VI, Fuji Film) were used in this study. The Wiener spectrum (WS), the presampled modulation transfer function (MTF), and the detective quantum efficiency (DQE) for both systems were measured. To evaluate image quality of the detector for chest radiography, the RQA 9 in the International Electrotechnical Commission (IEC) 62220-1 was used.

**Results:**The WS of the FPD system showed considerably lower than that of the CR system at every spatial frequency. The WS of the FPD system with a 50 % dose reduction of the CR system was almost identical to that of the CR system. The presampled MTF of the FPD system was comparable to that of the CR system. The DQE of the FPD system obtained at zero spatial frequency was almost twice than that of the CR system.

**Conclusion:**The radiographic noise property and the detection efficiency of the new ISS FPD were significantly superior to those of the conventional CR system. It is expected that the use of the new ISS FPD system for chest radiography can reduce the patient skin dose by 50 % compared with the conventional CR system.