The energy response of a detector is one of the considerations in the selection of technique factors in imaging. We examined such energy dependence of the photostimulable phosphor in a computed radiography system (Fuji FCR9000) in a clinical environment. Several sheets of acrylic and aluminum in various combinations were assembled to an extremity, a chest, and a skull. These test objects were placed between the imaging plates and the x-ray tube. Images of the extremity were taken with a kilovoltage ranging from 50 kVp to 65 kVp. Similarly, 65-80 kVp was used for the skull, and 70-110 kVp was used for the chest. Exposures were made with and without a grid. Tube currents were chosen to give approximately 1 mR (0.258 uC/kg) of radiation exposure at the imaging plates. The computed radiography system displayed a "S" value for each image plate after processing. This index of reading sensitivity has an inverse relation with the luminescence of phosphor. Therefore, the S-value was chosen in this investigation as the descriptor of the response of the imaging plates. S-values corresponding to the same amount of radiation exposure at the imaging plates were obtained by interpolation. Our results did not show any distinct extremum in the relationship of S-value versus kVp. In the results obtained without a grid, we observed a general trend of decreasing S-value with increasing kVp. This energy dependence was much weaker or absent among the results obtained with a grid.