

The Victoreen 7200 Double Check® is an ion chamber array device used for daily quality assurance (QA) measurements on linacs. In a single beam exposure with acrylic sheets and steel discs, the device provides information for QA constancy checks regarding the central axis output, symmetry, flatness, and beam energy. The use of the device presents interesting considerations for use with electron beams because the electrons are easily scattered due to air column and accessories. The energy check is obtained from an off axis measurement which may be expressed as a ratio of the central axis output. The off axis measurement for energy is along the beam diagonal. By rotating the device by multiples of 90 degrees, we investigated the off axis energy response in four quadrants for various electron beam energies from several linacs: Varian 2300CD, Elekta SLP, and a Siemens Mevatron. To establish QA tolerances for the device and to correlate the device response with TG40 values for a central axis energy shift of 2 mm for electron beams, measurements were made with and without an additional 2 mm of plastic water thickness covering all ion chambers. Although addition of 2mm plastic water phantom typically changes the energy ratio by no more 2-3%, 90 degree rotations can cause the energy ratio to change by 5 to 7%. The energy ratio variations were also dependent on the type of linacs.