

**Purpose:**

The characteristics of the StarCheck system are evaluated.

**Method and Materials:**

The StarCheck (T10032, PTW-Freiburg, Germany) consists of 512 ionisation chambers arranged in both main axes, as well as in both diagonal directions (chamber entrance window 2mm x 8 mm, height 5 mm, center-to-center distance 3mm). To allow a high spatial resolution, the narrow side is oriented perpendicular to the axes. Additional detectors are arranged within a 10 cm x 10 cm, 20 cm x 20 cm and 26 cm x 26 cm square. The center-to-center distance for the latter one is 5 mm, thus enabling a MLC position verification for MLCs down to 5 mm projection width.. For all chambers within these square arrangements the chamber size is 4 mm x 4 mm with a height of 5 mm .

**Results:**

The effective point of measurement was found to be 7.5 mm under the surface of the array. Within an uncertainty of +/-0.1 mm no difference could be found between 6 and 15 MV. Output factor measurements utilizing the central chamber of the array showed no significant deviation from diode measurements for field sizes larger than 2 cm x 2 cm. Checks such as daily stability of accelerator output, field flatness and symmetry, light-radiation field coincidence and MLC calibration or energy checks have been performed. The measurements agreed well with our standard systems 2D-ARRAY 729 and QC6-Plus (both PTW-Freiburg, Germany). Furthermore the system allows on-line adjustments e.g. during maintenance of the accelerator.

**Conclusion:**

The StarCheck proofed itself as a reliable and easy to handle measurement device which can be used for daily routine quality assurance as well as for maintenance adjustments of the accelerator. Due to the small detector cross section on the main axes, penumbra measurements can be performed with sufficient accuracy.