

AbstractID: 1738 Title: Verification of scatter and penumbra dose between fields using MapCHECK™ device for IMRT Quality Assurance

Quality Assurance procedures for Intensity Modulated Radiotherapy need to provide better accuracy with stringent limits and particularly less time consuming but without compromising the treatment outcome. The dose accuracy of treatment planning systems should be checked in the central and penumbral regions of segments, to account for scatter from neighboring IMRT segments where high dose gradients exist. The MapCHECK™ (Sun Nuclear corp.) device with 445 silicon diode detectors, allows us to check this with precision. Profiles generated on ADAC treatment planning system were compared with measurements using MapCHECK at various depths in a solid water phantom. In addition, film measurements for planer dose comparisons using Kodak EDR2 ready-pack film were also performed. Measurements with the film and the MapCHECK™ agree within 3% or 3mm distance agreement criteria. While there was discrepancy at shallow depths, the profiles for different field separations, matched well with calculations. The MLC positional accuracy was investigated and found to be satisfactory. This paper presents the results of the above investigations in detail.