

Purpose: To evaluate the use of 2D detector array for verification of intensity modulated radiotherapy (IMRT) fields for stereotactic radiotherapy (SRT) treatments. **Method and Materials:** We evaluated ten SRT plans with field sizes ranging from 3 cm to 6 cm with MapCHECK device that is routinely used for IMRT plan verification. We calculated the percent of passing points (PPP) for the distance to agreement (DTA) for absolute dose between measured and planned isodose lines above 10% using the MapCHECK software. We selected a value of 3 mm for DTA and 3% dose difference criteria for comparison. Dose sampling by MapCHECK detector array is limited for small field sizes due to detector geometry with 0.7 cm spatial resolution diagonally. To increase the number of points for more accurate evaluation, we repeated the measurement four times by shifting the array 0.5 cm in orthogonal directions. We then compare the combined measurement for each plan. We also measured the relative dose fluence using Kodak EDR2 films. We performed the γ analysis both for 3%, 3 mm and 2%, 2 mm criteria. The OmniPro-1 mRT software was used for film comparison with treatment plans. There was no direct comparison between film results and MapCHECK measurements. **Results:** The average PPP for merged shifted fields is 98.7%, while for single plan delivery is 98.5%. Slightly lower PPP was shown for a 3 cm field size plan with high dose gradient. For each individual plan, the variation between shifted measurements could rise as high as 8% for smaller fields. The average PPPs for film and MapCHECK compared to planned dose are 98.7% vs. 100% for γ analysis with 3%, 3 mm criteria and 92.2% vs. 97.7% for γ with 2%, 2 mm, correspondingly. **Conclusion:** MapCHECK is an appropriate clinical tool for verification of IMRT plans for SRT.