Purpose: The verification of the monitor unit (MU) calculation of the planning system using an independent procedure is a very important issue in intensity modulated radiation therapy (IMRT). Several methods are used and different software has been developed for this purpose. In our institution MU Check software (Oncology Data Systems Inc.) has been used as a part of the quality assurance procedure to verify the monitor unit calculation of Eclipse 8.6.15 (Varian Medical Systems Inc.)

Methods: Treatment plans are determined on the Eclipse treatment planning system to be later exported to the MU Check verification system by creating a uniform plan for a phantom to avoid deflection by heterogeneity. Results are presented for all locations of 150 patients. The algorithm used by Eclipse is AAA and the one for verification calculation software is a modified Clarksson’s integration using annular sectors.

Results: The results show a match between the monitor units calculated by the planning system and those calculated by the verification system. The main deviations are obtained in more complex plans for specific areas, corrected by a proper choice of the calculation point. These deviations for the full plan are never more than 4% with an average 1.5% and a standard deviation of 1%.

Conclusions: Although the results are quite good we always use these verification systems in coordination with another method involving direct measurements, but these type of verification may involve a significant reduction in time per patient specific quality assurance. Anyway we consider necessary the verification of the monitor unit calculation as part of quality assurance program in any radiotherapy department.