Purpose: To commissioning RadCalc program for secondary point dose check in conventional 2D and 3DCRT calculation techniques.

Methods: Test plans for 6 MV and 10 MV photon beams with conventional and 3DCRT plan were created in RadCalc program. Field was varied with a range of field sizes and modifier techniques referred to IAEA-TECDOC-1583 with central axis and off central axis calculation points. The measured dose for each field was then compared to the calculated dose (RadCalc program and Eclipse treatment planning system).

Results: In conventional field validation, RadCalc shows good agreement with measured doses. For open and almost all wedge fields, RadCalc calculation agree with dose measurement within 1%. Differences of over 1% were found in maximum wedge fields and some half fields. However, the dose difference between calculation and measurement was within 2% in all tests. In 3DCRT plan validation, the central axis point dose between calculation and measurement in all tests are agree within the IAEA-TECDOC-1583 criteria. When measured/calculated dose points were in non-tissue equivalent such as lung and bone which were off central axis situation, dose difference is more than 10%. Unfortunately if measured/calculated dose points are outside the field (scatter dose), the result cannot be validated. Part of this large difference between two calculated and measured can be the volume effect of the chamber. In comparison between dose calculated by RadCalc and Eclipse, overall results show dose difference within 5%.

Conclusions: RadCalc program can be used as a point dose calculation check in conventional 2D and 3DCRT techniques.