Purpose:
Recently, radiotherapy for cancer advances to the highly precise treatment by various technical progresses. The highly precise radiotherapy that seems to be intensity modulation radiation therapy (IMRT) popularizes rapidly now. Therefore high technology of radiotherapy is demanded, and the quality control / quality assurance (QC / QA) is needed. In this study, it is a purpose to make the third-party evaluation program to perform the radiotherapy that is safe from IMRT.

Methods:
The measurement was executed with an anthropomorphic IMRT phantom by the on-site visit. The IMRT phantom was divided into a phantom shell and a module. The IMRT treatment plan was drafted by each institution to satisfy the following optimization conditions. (1) The D95 prescription (PTV) was 2Gy. (2) The PTV maximum dose was considered to be less than 110 %. (3) Organ at risk (OAR) was considered to be less than 60 %. The dose inspection for a drafted IMRT treatment plan was executed with the ionization-chamber dosimetry module and the film dosimetry module.

Results:
The evaluation of the absorbed dose was executed for two points in PTV. In addition, the dose distribution measured axial, coronal, and sagittal side with a film. For these measurement sides, the evaluation of the position gap was achieved in the part that the dose gradient became precipitous. For the ionization-chamber dosimeter, the differences at two points in PTV were less than ±3 %. For the dose distribution with the films, the differences for the position gap were less than ±2 mm.

Conclusions:
In this study, it was developed the phantom for inspection and measurement machinery to assure of the quality for IMRT, and the third-party evaluation program was made. In the future, it will be necessary to repeat inspection in plural institutions to raise the reliability of the inspection result.