

Three major contributors of scatter radiation in an irregular field are; flattening filter, beam modifier, and tertiary collimator. A generalized algorithm for in-air output factor calculation is developed which considers these components separately. A detector's-eye view field defined at the source plane is used to account for the effects of collimator exchange and the partial blockage of the flattening filter by the tertiary collimator. In this algorithm, a source-plane field is mapped back to an equivalent square in the detector plane to utilize experimentally measured output as a function of square field. Scatter from beam modifiers (e. g., wedge) and tertiary collimator (e.g., MLC or Cerrobend block) is accounted separately using field mapping technique and experimentally measured data for beam modifier and tertiary collimator scatter for a range of square fields. This methodology predicts output to within 0.5% of measured output even when a shaped-field opening (both centered and off-centered) is very small compared to collimator opening. Therefore, this methodology is very suitable for predicting the in-air output accurately for intensity modulated radiation fields.