Purpose: To describe an efficient method for verifying the size and centering of the radiation field from the Cyberknife IRIS variable collimator with sub-millimeter accuracy using a general purpose commercially available diode array.

Methods: We present a technique using a conventional diode array (Sun Nuclear Profiler) with the array at an extended distance of 320 cm. The projection of the 4 mm diode spacing back to the 80 cm field definition distance gives an effective spacing of 1 mm, sufficient to confirm proper operation of the IRIS. We describe the data acquisition process and present data comparing the Profiler measurements to scanned measurements for both profile and FWHM analysis and reproducibility of the technique over repeated measurements.

Results: Average difference between original water scanner measurements and diode array measurements over the 12 aperture sizes (from 5 mm to 60 mm) were -0.14 mm (range 0.03 mm to 0.83 mm). Reproducibility and centering measurements had a similar range of accuracy.

Conclusions: A general purpose commercially available diode array can be used to quickly and accurately characterize the field size and centering of the Cyberknife IRIS variable collimator system with sub-millimeter accuracy subsequent to service, software recalibration, software upgrades or associated with routine QA. This technique avoids the time consuming and cumbersome water tank scanning with a diode and the difficulties associated with image based measurements (CR or radiochromic film) that require time consuming and careful calibration and choice of threshold values.