

The CTBW Tool Kit is used to make beam width measurements quickly and easily based on a new patent pending* technique. The toolkit includes three radiopaque masks of different sizes that are appropriate for measurement of standard CT machine beam widths. Dose measurements are made using a Radcal Accu-Gold family system equipped with a CT ion chamber. The mask fits securely over the chamber and measurements are performed with and without the mask in place. From these measurements alone the beam width is calculated with excellent precision. The mask is the only specialized equipment needed using this method, and no image analysis is required.

The kit includes three precision masks packaged in a compact zippered case. Each mask is engraved with its specifications.

The Model 8501 is sized to fit a Radcal 10x6-3CT chamber (9.1 mm) without its phantom adapter. The Model 8502 is sized to fit 12.7 mm diameter CT chambers.



Specifications	Model 8501	Model 8502
Nominal Widths (mm)	5	5
	10	10
	15	20
Inner Diameter (mm)	9.4	12.7
Outer Diameter (mm)	15.4	18.7

* Licensed under agreement with the University of Alabama-Birmingham

Measuring the Beam Width

Simply perform two dose measurements, one without the mask (D_{WM}) and a second with the mask in place (D_M). The effective dose per unit length, $D_{P/L}$, is calculated using the mask length, L_{MASK} , as:

$$D_{P/L} = (D_{WM} - D_M) / L_{MASK}$$

The beam width for standard CT systems is largely determined by the collimation setting. Once $D_{P/L}$ has been determined, beam width measurements can be made for any nominal collimation setting. Simply adjust the collimation to the desired configuration and make a dose measurement without the mask in place, D . The beam width, B_w , is:

$$B_w = D / D_{P/L}$$

Using this method, CT beam width can be determined in less than 15 minutes based on simple dose measurements with better than 0.5 mm accuracy.

