SY1. CT Laser Light Accuracy

Laser light accuracy must be determined for both axial scan localization lights, which indicate the location of the radiation beam relative to the external anatomical structures of the patient, and the sagittal and coronal scan localization lights, which centre the anatomic structure of interest in the scan field of view. This can be tested in several ways as shown below:

1. Axial Scan Localization Lights—Axial scan localization light accuracy is tested either by imaging a thin wire (approximately 1 mm diameter) or by using a needle to puncture holes in film at the positions of the laser lights and exposing the film using the smallest available scan width. The difference between the exposed areas on the film and the locations of the pin pricks must be less than ± 2 mm.

2. Some manufacturers’ phantoms have fiducial markers which can be aligned with the external lasers and then seen in the image using a small slice width, as in the GE CT phantom shown below. The ACR phantom (Gammex 464) has beads at the surface which can be used in the same way.

3. Isocentre Alignment and Sagittal and Coronal Scan Localization Lights—Place a thin absorber (pencil) centered in the tomographic plane at the intersection of the sagittal and coronal positioning light fields.
The intersection of the sagittal and coronal scan localization lights must indicate the centre of the field of view. The midline of the table should be coincident with the sagittal scan alignment light. The results must be within the manufacturer’s recommended values and tolerances. A limit of ± 5 mm should be achievable.