

**4732.1130 EQUIPMENT PERFORMANCE TESTS FOR EXTERNAL BEAM
TELETHERAPY AND SIMULATION SYSTEMS.**

Subpart 1. Dosimetry.

TEST TYPE	MINIMUM TEST INTERVAL	TOLERANCE
A. Central axis dose calibration	At intervals not to exceed 12 months	2 percent
B. Constancy checks-photons		
(1) Dose per monitor unit along central axis	Weekly	3 percent
(2) Depth dose	Monthly	2 percent
(3) Beam uniformity	Monthly	3 percent
(4) Monitor chamber linearity	At intervals not to exceed 12 months	1 percent
(5) Timer linearity and error	At intervals not to exceed 12 months	1 percent

Subp. 2. Geometry.

TEST TYPE	MINIMUM TEST INTERVAL	TOLERANCE
A. Field positioning aids		
(1) Light field and radiation field agreement	Monthly	2 mm
(2) Mechanical distance pins, lasers, Monthly and SSD lights	Monthly	2 mm
(3) Scale readouts	Monthly	2 mm/1 degree angle
B. Machine alignment		
(1) Jaw symmetry	At intervals not to exceed 12 months	2 mm
(2) Coincidence of collimator (jaw) and gantry axes	At intervals not to exceed 12 months	2 mm

(3) Stability of gantry arm and bearing under rotation	At intervals not to exceed 12 months	2 mm
(4) Couch motion and tabletop sag	At intervals not to exceed 12 months	2 mm

Subp. 3. **Constancy checks-electrons.**

TEST TYPE	MINIMUM TEST INTERVAL	TOLERANCE
A. Beam uniformity	Monthly	5 percent
B. Depth dose	Monthly	2 mm at therapeutic depth
C. Dose per monitor unit constancy check	Weekly	3 percent

Subp. 4. **Treatment accessories.***

TEST TYPE	MINIMUM TEST INTERVAL	TOLERANCE
A. Wedge transmission factor	At intervals not to exceed 12 months	2 percent
B. Transmission factor constancy for all treatment accessories	At intervals not to exceed 12 months	2 percent

*Attenuation in blocks, wedge factors, and compensator data must be checked annually. A visual inspection of the mechanical integrity of these accessories must be done monthly.

Subp. 5. **Simulators.**

TEST TYPE	FREQUENCY	TOLERANCE
A. Localizing lasers	Daily	2 mm
B. Distance indicator	Daily	2 mm
C. Field size indicator	Monthly	2 mm
D. Gantry/collimator angle indicators	Monthly	1 degree

E. Cross-hair centering	Monthly	2 mm diameter
F. Focal spot-axis indicator	Monthly	2 mm
G. Fluoroscopic image quality	Monthly	Established baseline
H. Collision avoidance	Monthly	Functional
I. Light/radiation field coincidence	Monthly	2 mm or 1 percent
J. Collimator rotation isocenter	At intervals not to exceed 12 months	2 mm diameter
K. Gantry rotation isocenter	At intervals not to exceed 12 months	2 mm diameter
L. Couch rotation isocenter	At intervals not to exceed 12 months	2 mm diameter
M. Coincidence of collimator, gantry, couch axes, and isocenter	At intervals not to exceed 12 months	2 mm diameter
N. Table top sag	At intervals not to exceed 12 months	2 mm
O. Vertical travel of couch	At intervals not to exceed 12 months	2 mm
P. Exposure rate	At intervals not to exceed 12 months	Established baseline
Q. Table top exposure with fluoroscopy	At intervals not to exceed 12 months	Established baseline
R. kVp and mAs calibration	At intervals not to exceed 12 months	Established baseline
S. High and low contrast resolution	At intervals not to exceed 12 months	Established baseline

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