


Name of Policy:	<u>Periodic quality assurance testing of the PET/CT simulator</u>			
Policy Number:	3364-134-103			
Department:	Radiation Oncology			
Approving Officer:	Chief Executive Officer - UTMC Professor & Chairman, Radiation Oncology			
Responsible Agent:	Technical Manager, Radiation Oncology			
Scope:	Radiation Oncology			
		Effective Date: 7/1/2023		
		Initial Effective Date: 5/1/2014		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <input type="checkbox"/> New policy proposal <input type="checkbox"/> Major revision of existing policy </td> <td style="width: 50%; border: none;"> <input type="checkbox"/> Minor/technical revision of existing policy <input checked="" type="checkbox"/> Reaffirmation of existing policy </td> </tr> </table>			<input type="checkbox"/> New policy proposal <input type="checkbox"/> Major revision of existing policy	<input type="checkbox"/> Minor/technical revision of existing policy <input checked="" type="checkbox"/> Reaffirmation of existing policy
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OBJECTIVE:

Routine QA testing is performed on the PET/CT-SIM unit to assure the scanner is in optimal operating condition. These testing procedures are based on American Association of Physicists in Medicine’s TG66 report.

CT-SIM

DAILY: The following tests are performed on the scanner in the beginning of the day when there is a patient scheduled to be scanned:

- Manufacturer’s recommended warm-up procedure
- Alignment of gantry lasers with the center of imaging plane (BB test)
- CT numbers accuracy
- Image noise assessment
- In plane spatial integrity (x or y)

MONTHLY: Monthly QA will be performed by a physicist during each calendar month following the recommendations of the AAPM TG66. These checks will include documentation of:

- Orientation of the gantry lasers with respect to the imaging plane
- Orientation of the wall/ceiling lasers with respect to the imaging plane
- Table vertical and longitudinal motions
- Spacing of wall lasers with respect to gantry lasers and scan plane
- Orientation of the CT scanner tabletop with respect to the imaging plane
- CT number accuracy
- In plane spatial integrity (both directions)
- Field uniformity*

ANNUAL: A physicist will perform annual calibrations and QA within 14 months of the initial acceptance or the previous annual QA. These reports will include the documentation of:

- CT Number Accuracy
- Image Noise
- Image Uniformity & Artifacts
- Low Contrast Performance & CNR
- High-Contrast Resolution
- Spatial Resolution
- Slice Thickness Accuracy & Geometric Accuracy

- Slice Positioning & Laser Light Accuracy
- Table Incrementation (Indexing and Position) Accuracy
- Radiation Beam Width
- Scan Localization
- Sensitivity Profile Width (twice annually)
- Radiation Dosimetry (CTDI Accuracy)
- CT Protocol Review
- Monitor Evaluation

PET SCANNER

DAILY

- Manufacturer’s daily automated QC to check baseline, energy, PMT gains, emission, and timing

MONTHLY

- SUV Validation
- Image Uniformity

ANNUAL

- SUV Validation
- Image Uniformity & Artifacts
- Low Contrast Performance
- High-Contrast Resolution
- Monitor Evaluation

<p>Approved by:</p> <p><u>/s/</u> _____ <u>07/01/2023</u> Mersiha Hadziahmetovic MD Clinical Service Chief, Radiation Oncology Date</p> <p><u>/s/</u> _____ _____ Richard P. Swaine Chief Executive Officer - UTMC Date</p> <p><i>Review/Revision Completed By: Michelle Giovanoli</i></p>	<p>Review/Revision Date:</p> <p>5/1/2014 5/1/2017 12/1/2017 7/1/2020 7/1/2023</p>
<p>Next Review Date: 7/1/2026</p>	
<p>Policies Superseded by This Policy:</p>	