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| Name of Policy: | PERIODIC QUALITY ASSURANCE TESTING OF THE PET/CT SIMULATOR |  THE UNIVERSITY OF TOLEDO Effective Date: 12/1//2017 Initial Effective Date: 5/1/2014 |
| 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 | |
| <input type="checkbox"/> New policy proposal <input type="checkbox"/> Minor/technical revision of existing policy | | |
| <input checked="" type="checkbox"/> Major revision of existing policy <input type="checkbox"/> Reaffirmation of existing policy | | |

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

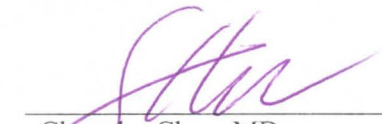
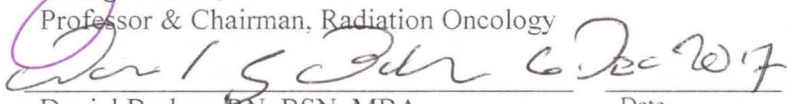
- Manufacturer's daily automated QC to check baseline, energy, PMT gains, emission, and timing

MONTHLY

- SUV Validation
- Image Uniformity

ANNUAL

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

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| <p>Approved by:</p>  <hr/> <p>Changhu Chen, MD Professor & Chairman, Radiation Oncology</p>  <hr/> <p>Daniel Barbee, RN, BSN, MBA Chief Executive Officer - UTM</p> <p><i>Review/Revision Completed By:</i> Michelle Giovanoli</p> | <p>Review/Revision Date: 5/1/2014 5/1/2017 12/1/2017</p> <p>11/29/2017</p> <p>Date</p> <p>Date</p> <p>Next Review Date: 12/1//2020</p> |
| <p>Policies Superseded by This Policy:</p> | |