

CyberKnife® Physics and QA Equipment

The equipment listed in this table should be considered only as a starting point for decision making. This list is designed for a CyberKnife® site that does not have existing equipment. Sites with equipment should use this list to determine what is missing.

- There is more than one way to perform QA operations.
- Medical Physicists must make the determination of the specific equipment needed at their site.
- Radiochromic film and other consumables, such as immobilization devices are not listed.

| Item | Specifications | Use | C | D | M | A | R | P |
|--------------------------------|---|---|---|---|---|---|---|---|
| Water Tank | 0.1 mm measurement accuracy capable of 0.2 mm step spacing, OCR in-plane and cross-plane as well as 15 deg. and 45 deg. angles, to scan up to 125mm off axis (or 172mm off axis if fixed SSD beam profile scanning will be used) and 300mm deep, diode compatible | OCR, TPR, Output Factors | ✓ | | | ✓ | ✓ | |
| TMR Option | Measure TPRs directly rather than converting from PDDs so this option will save data collection time | TMR | ✓ | | | ✓ | ✓ | |
| Diodes with no buildup (2X) | Contact Accuray Physics Support as the specifications for individual diodes are continuously changing | OCR, TPR, Output Factors | ✓ | | | ✓ | ✓ | |
| Computer | Laptop | Water tank software, Dose analysis software, etc. | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Farmer Chamber | A Farmer chamber smaller than 0.6cc (e.g. 0.3cc) should be considered to reduce OCR effects | Absolute Dose Calibration | ✓ | | ✓ | ✓ | ✓ | |
| Calibration for Farmer Chamber | May need build-up cap depending on country's calibration procedure | Absolute Dose Calibration | | | | ✓ | ✓ | |
| Digital Barometer | Calibrated | Absolute Dose Calibration | ✓ | | ✓ | ✓ | ✓ | |
| Thermometer | Water compatible, calibrated with 0.2 C scale | Absolute Dose Calibration | ✓ | | ✓ | ✓ | ✓ | |
| Electrometer | Calibrated over the ion chamber and diode range used | Absolute Dose Calibration, Verifies Dose Delivery to Phantom Output Factor Measurements | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Electrometer Calibration | Calibration for each scale used by the electrometer | Absolute Dose Calibration, Verifies Dose Delivery to Phantom | ✓ | | ✓ | ✓ | ✓ | ✓ |

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| Daily QA Device | Meets local QA requirements | Daily Output Check, Flatness & Symmetry | | ✓ | ✓ | | ✓ | |
| Flatbed Film Scanner | See current recommendations from ISP for scanning their Radiochromic Film. | Film analysis for targeting accuracy | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| MLC QA software | QA software must have the ability to analyze Bayouth (Garden Fence) film tests | MLC QA | ✓ | | ✓ | | ✓ | |
| Slab Phantom with fiducials | At least 200x200 mm with enough depth to provide for sufficient backscatter at the depth of measurement. <ul style="list-style-type: none"> • plugs and holes for ion chamber and/or film inserts and/or TLDs • accurately known dimensions for structural features • inhomogeneities | Verifies Point Dose Delivery to Phantom | ✓ | | | ✓ | | ✓ |
| Film & micro volume ion chamber slabs | Must be compatible with the slab phantom | Verifies Dose Delivery to Phantom | ✓ | | | ✓ | | ✓ |
| Micro Volume Ion Chamber | A Farmer chamber smaller than 0.6 cc is recommended to reduce OCR effects | Verifies Dose Delivery to Phantom | ✓ | | | ✓ | | ✓ |
| Isodose Comparison Software | Able to import film measurements and MultiPlan® RT Dose files | Patient Specific QA Analysis | | | | | | ✓ |
| kV Contrast & Resolution Phantom | Ability to mount at a 45 deg. angle to the floor. Analysis software very helpful but not required. | Verify Imaging System | ✓ | | | ✓ | ✓ | |
| kVp Meter | 80-150 kV range | Verify Imaging System | ✓ | | | ✓ | ✓ | |

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| Dynamic Thorax Phantom | | Verification of Xsight® Lung Tracking Imaging | ✓ | | ✓ | ✓ | | |
| 4D CT QA insert | | Verification of 4D Treatment Planning | ✓ | | ✓ | ✓ | | |
| Electron Density Phantom | Mass and electron densities provided over the clinical range of use | Convert CT numbers to density values for Treatment Planning | ✓ | | | ✓ | ✓ | |
| *Survey Meter | Standard vault survey meter for 6MV Linac | Radiation Surveys | ✓ | | | | | |

**If you have questions about specific equipment, please contact Accuray Customer Support at:
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customersupport@accuray.com**