MIMI PHANTOM

ISOCENTER ALIGNMENT IGRT QA

Test the coincidence of the isocenter prescribed by the lasers, treatment beam, 6D couches, and image guidance systems

ENSURE IMAGE GUIDANCE ACCURACY

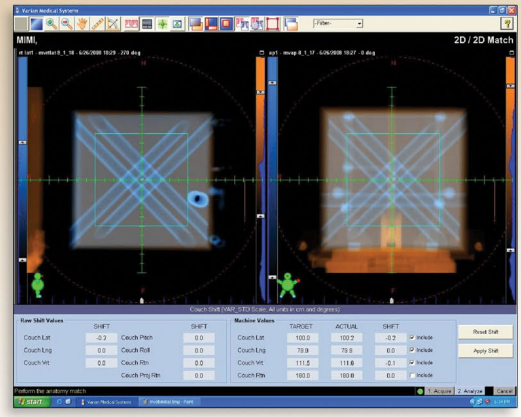
Treatment with radiation on a modern linear accelerator relies on the ability to position the patient with incredible accuracy. This is why it is critically important to verify that the systems used for positioning are all describing the same isocentric point in space as the treatment beam.

FAST, ACCURATE ALIGNMENT CHECKS

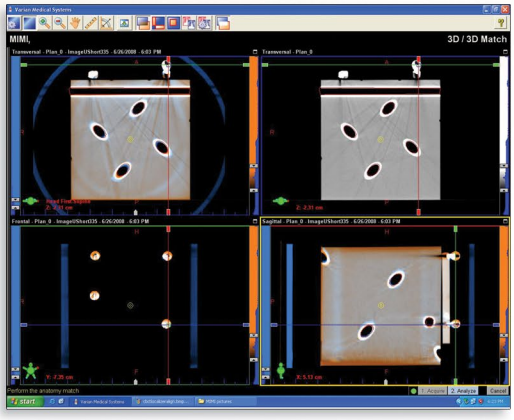
The MIMI (Multiple Imaging Modality Isocentricity) Phantom from Standard Imaging allows you to establish mechanical stability of the image guidance system by verifying the isocenter described by the MV, kV, CBCT, and other guidance systems is within accepted 1mm tolerances. This daily test can be performed in 2 minutes giving you the confidence that you can deliver the radiation prescription on target. A 6.4 mm sphere at phantom center assists with virtual and physical graticule alignment checks.

AUTOMATIC REGISTRATION ALIGNMENT DESIGN

Five bone equivalent rods are uniquely set so that four of them intersect at 90 degree angles when viewed in DRRs or a 2D projection image. The rods traverse the entire phantom making them visible in any image or slice allowing for easy and automatic 2D/2D and 3D/3D matching registration for fast verification of isocenter position.



A 2D/2D matching example with the MIMI Phantom



A 3D/3D matching example with the MIMI Phantom

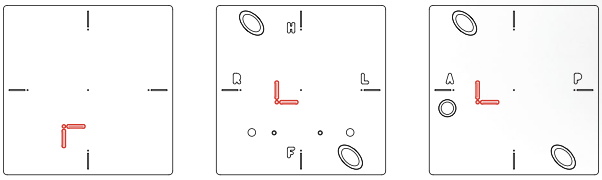
Additional Features

Varian FramelessArray™ Optical Guidance System QA

- The MIMI Phantom features pre-drilled holes which precisely fit the Varian FramelessArray Optical Guidance System localizer. By fitting the localizer to the phantom, additional testing can be done to verify the isocenter prescribed by the optical guidance system is coincidental to the lasers and the treatment beam isocenter.

Test Automatic Table Adjustments

- The MIMI Phantom features additional cross-hair markers that are offset known distances from the true isocenter. Setting up the phantom aligned to these offsets allows you to verify the shifts prescribed by automatic table positioning systems.



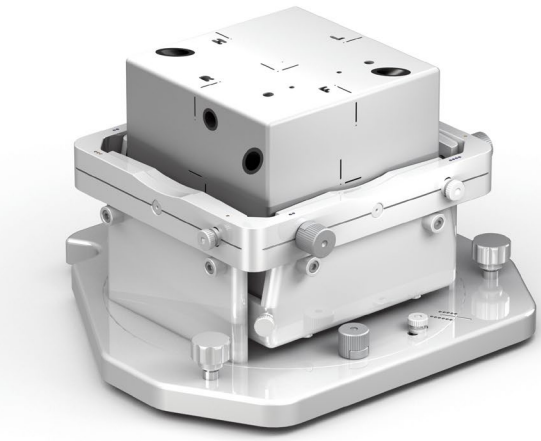
Offset cross-hair markers on the MIMI Phantom, shown in red, are on all sides except the bottom

Test Integrated System Accuracy of:

- 3D Cone Beam registration (CBCT, OBI, XVI) systems
- MV/kV Isocentricity
- Lasers and Couch Table Adjustments
- Optical Guidance Systems
- Virtual and physical graticules
- 6D couch pitch, yaw, roll

HexaCheck

Designed exclusively for the MIMI phantom, the HexaCheck allows secure integration with the MIMI Phantom making it easy to perform 6D couch commissioning and QA.



Accuracy in 6 Dimensions

- Select up to three angle offsets disengaging and locking one of three pins and for each desired ± 2.5° angular offset for pitch, yaw, and roll.
- Instantly locks into couch for isocenter alignment and repeatable positioning to within 0.1°.
- Compatible with a wide range of couches, including: Varian Perfect Pitch, Elekta HexaPod, CIVCO Protura, Brainlab Robotics 6D, and Accuray RoboCouch.
- Built-in spirit level.
- HexaCheck fits seamlessly into your workflow as an extension of your 3D IGRT QA routine. And if you're a PIPSpro user, you're in luck – 6D couch QA functionality is already built into PIPSpro's IGRT QA module.

The MIMI Phantom was developed in collaboration with Peter Remejier and Marcel Van Herk of the Netherlands Cancer Institute, NKI-AVL, Amsterdam, The Netherlands

MIMI PHANTOM (REF 91240) SPECIFICATIONS

MIMI PHANTOM DIMENSIONS	*Height:* 5.5 in, 14 cm	*Width:* 5.5 in, 14 cm
	Length: 5.5 in, 14 cm	*Weight:* 8.25 lbs, 3.75 kg
MATERIALS	Acetal copolymer for main phantom Black PVC Rods (bone equivalent) (30) 1 mm stainless steel spheres 6.4 mm high contrast, non-artifact sphere in center	

HEXACHECK DIMENSIONS	*Height:* 4.7 in, 11.9 cm	*Width:* 11.5 in, 29.2 cm
	Length: 11.2 in, 28.5 cm	*Weight:* 6.35 lbs, 2.9 kg
MATERIALS	Acetal for HexaCheck and thumbscrews Aluminum hardware ensures no imaging artifacts	

PERFORMANCE VALIDATION

Basavatia, A., Tomé, W. "Multiple Imaging Modality Isocentricity Phantom", Poster Presentation, 50th Annual Meeting of the American Association of Physicists in Medicine, Houston TX, 2008

Remejier, P., Van Herk, M. "Geometry QA Phantom for Mechanical Stability of the Image Guidance System", Presentation, World Congress of Medical Physics and Biomedical Engineering, Seoul Korea, 2006

Roring, Joseph E., Gutierrez, Alonso N. "HexaCheck 6D Quality Assurance Phantom Implementation for Elekta HexaPod and BrainLAB Robotics 6D couches.", 2016

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