

MRI^{4D} QUASAR BY MODUS QA



US Pat. 10,090,781

MRI-safe
4D Adaptive
MRgRT QA

KEY FEATURES

BENEFITS

MR Safe:	Ferrous and artifact free 4D-MRI QA on systems up to 3T
RF Shielded:	Compact design enables operation within the magnet bore with no artefacts or RF noise
Multimodality:	MRI, CT, PET and LINAC compatible for MR4D vs CT4D, MR-PET and MRgRT 4D QA
Connectivity:	Control the phantom directly from the console or equipment room with included software
Waveforms:	Import, create, edit and stream patient-specific or custom waveforms
Adaptable Motion:	Flexibility to move inserts with translation or with translation and rotation
Interchangeable Inserts:	Configurable inserts with optional targets to increase developing and testing capabilities

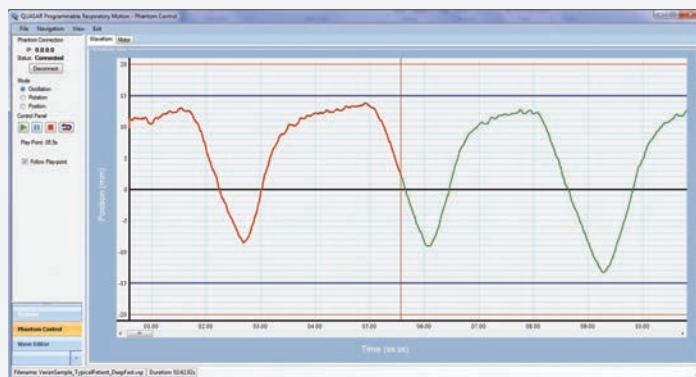
QUASAR™ MRI^{4D} is the world's first MR safe programmable 4D phantom. Designed for adaptive MRgRT QA, the QUASAR™ MRI^{4D} Motion Phantom works on the ViewRay MRIdian, and Elekta Unity as well as other MRI systems such as the Philips Ingenia for MR-Simulation QA.



The compact design allows users to place the MR-safe 4D phantom in the bore of the magnet to acquire images on low and high-field strength MRI systems with no induced artifacts or RF noise.

Interchangeable inserts are available for imaging, planning, targeting, dosimetry and delivery QA. The phantom is operated under software control and motion profiles are programmable. The included software provides tools to create, import, edit and stream patient-specific respiratory waveforms.

The electronic control box is equipped to test the ViewRay MRIdian beam latency.

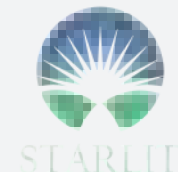


Above: Screenshot of the QUASAR™ Respiratory Motion QA Software.



THE WORLD'S EXPERTS IN MR-GUIDED RADIOTHERAPY ARE ALSO OUR PARTNERS.

Modus QA is excited to be at the forefront of the next revolution in precision radiation delivery with groundbreaking MR image guidance. With nearly 20 years in the radiotherapy QA field, our experience and expertise has earned us a global reputation with our collaborators as their partner of choice in providing cost-effective and innovative quality assurance tools.



We are proud to be part of the ViewRay partner program and the STARLIT Elekta / Philips consortium (System Technologies for Adaptive Real-time MR image-guided Therapies) to provide necessary capabilities related to 4D MRgRT quality assurance and dosimetry.

MINIMUM TECHNICAL REQUIREMENTS

- ▶ **Operating System:** Windows 7 SP1, 8.1 or 10
- ▶ **Ports:** 1 Ethernet

SPECIFICATIONS

- ▶ **MR-Safe Motor Assembly:** 50.5 cm L x 15.25 cm W x 18 cm H (dimensions), 3.2 kg (weight)
- ▶ **Linear Motion:** ± 20mm (continuous sinusoidal), ±15mm (programmable) along Z axis
- ▶ **Non-linear Motion:** 60 deg total twist range along X/Y axis (Rotation Mode), 30 deg (max) total twist range (Sinusoidal Mode, amplitude dependent), 11 deg (max) total twist range (Oscillation Mode, waveform dependent)
- ▶ **Motion Accuracy:** within 0.25 mm
- ▶ **MR Body Oval:** liquid fillable 20 cm L x 30 cm W x 20 cm H with two insert openings for central or offset imaging
- ▶ **Interchangeable Insert:** 25 cm long x 7.4 cm internal diameter, 1 kg (when liquid filled)
- ▶ **Mounting Stem & Target:** mounting stem attaches 30 mm spherical target (air or liquid filled) to seal-ring lid
- ▶ **Seal-Ring Lids:** 1-w/central mounting stem position, 1-w/dual offset mounting stem positions, 1-w/no mount position
- ▶ **Dovetail Collar:** with thumbscrew lock to secure position of fixed interchangeable insert within MR Body Oval opening
- ▶ **Cables:** quadruple shielded DB 15 male to female cables, CAT5 Ethernet cable
- ▶ **Power Supply:** DC power supply with AC power cord (110-220V, 50-60Hz)

ORDERING INFORMATION

100-1022 QUASAR™ MRI^{4D} Motion Phantom Includes:

- | | | | |
|----------------------|------------------|---------------------|----------------------------|
| ▶ 1-Motor Assembly | ▶ 1-MR Body Oval | ▶ 2- Inserts | ▶ 1-Mounting Stem & Target |
| ▶ 3-Seal-Ring Lids | ▶ 2- Seal-Rings | ▶ 1-Dovetail Collar | ▶ Cables/Power Supply |
| ▶ 1-Software License | ▶ User's Guide | ▶ Heavy Duty Case | |

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QUASAR MRI^{4D} is patent protected under United States Patent No.: 10,090,781 and manufactured under license from CIRS, Inc., Norfolk, Virginia, (US Pat. 7,151,253).

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