

Magnetic Resonance Image Quality Assurance

For MRI, MRI Simulator and MRI-Linac in Radiation Therapy

JW Pacific Company Limited

Asia-Pacific Regional Representative

Room 1104, Crawford House
70 Queen's Road Central,
Central,
HONG KONG

Phone: +852 2150 1927
Fax: +852 2961 4800
E-mail: cs@jwpacific.com
www.jwpacific.com

South Korea Distributor

Withus Meditech

294 Songnim 4-dong
Dong-gu,
Incheon
South Korea

Phone: +81 10 5480 6669
E-mail: jjcho@withusmeditech.com

MR Image Quality Assurance In Just One Step

Export whole set of MR images to pre-defined folder in the network.

The Radia Cerberus automated process is to facilitate the flow of QA procedure with minimal human interaction.

For any image quality test result that is out of tolerance, you will receive email notice for appropriate action.

If all test results are within tolerance, there would not be any notification.

It is recommended to review test results and trending of each tests to capture drifting and shifting, performing preventive maintenance before the machine fails.

MR Image Quality Assurance

Localizer Length

Geometric Accuracy

Slice Thickness Accuracy

Slice Difference Accuracy

Integral Uniformity

Percent-Signal Ghosting

Contrast to Noise Ratio

Number of Spokes Detected

Testing of Localizer, Slices 1,5,,7,8,9, 10 and 11.

Magnetic Resonance Image Quality Assurance

For MR Scanner, MR Simulator and MR-Linac

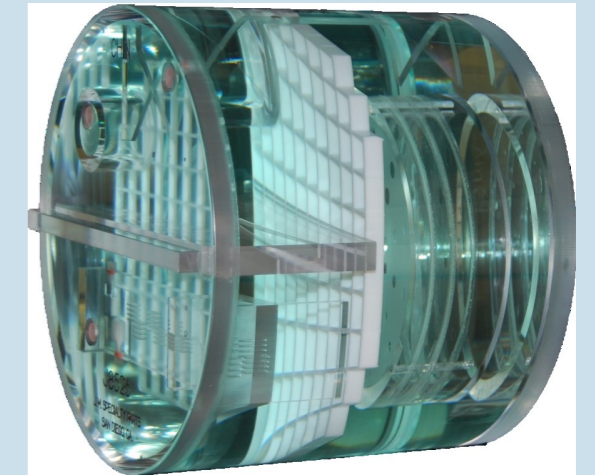
MR Image quality assurance represents a technical baseline for producing acceptable diagnostic examinations. In addition to this, Due to the use of MR images for delineation of tumour and critical organs, MR image quality is getting more important in Radiotherapy.

While using human to evaluate MR image quality is very time consuming and subject to experience of the operator, the use of ACR Large MRI Phantom to monitor MR image quality is getting more popular in Radiotherapy departments.

With the aid of computer software to analyse these MR images, image quality can be obtained within minutes. MR image quality results can also be recorded and tracked. Statistical Process Control is being used to monitored performance of the MR , detecting drifting or shifting of test results. Any test results exceed pre-defined tolerances are recorded. Automatic emails are send to responsible manager to alarm the manager to take appropriate actions.

Statistical Process Control can provide unattended monitoring of systemic errors, such as less than desired image quality due to deterioration of machine components, unintentional human errors etc.

The use of ACR Large MRI QA phantom and RIT Radia ACR MRI QA software provide continuous monitoring of MR Image Quality with minimal human interaction.



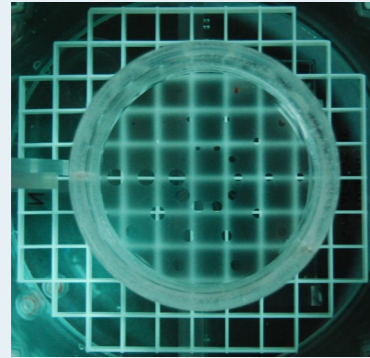
What You Would Need

ACR Large MR Image Quality Assurance Phantom

RIT Radia Software for ACR MR Image Quality Assurance

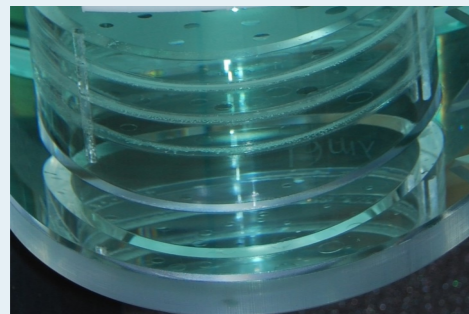
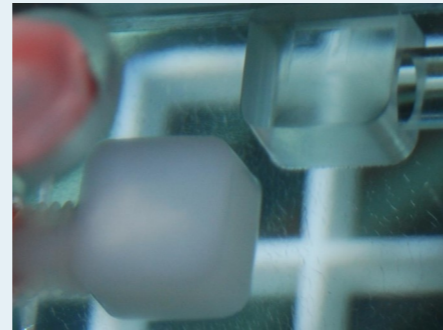
Image Quality Assurance Make Easy

ACR Large MRI Phantom Components



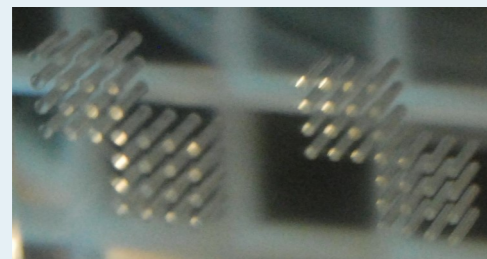
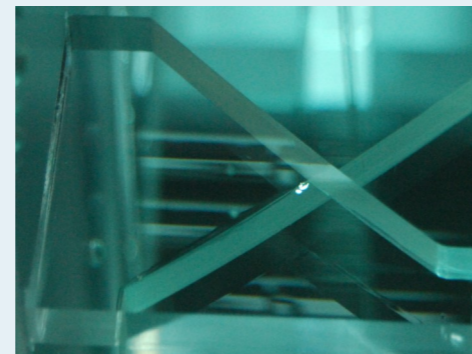
Array of 10 by 10 square Grid for Geometric Accuracy, Distortion, Artifacts and Distance Measurement.

Two cubes with 10 mmol nickel chloride and vegetable fat, to test for bandwidth by measuring chemical shift



Four low-density contrast disks with holes of different diameters at 0.002, 0.004, 0.006 and 0.008 inch in thickness, to assess the scanner's ability to distinguish low contrast objects.

Two sets of paired 45° wedges. Used to precisely measure physical and electronic slice offsets and evaluate small inter-slice gaps.

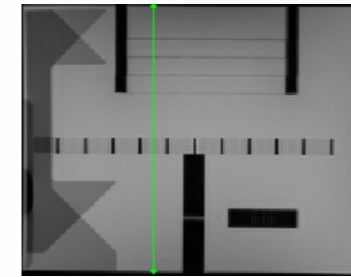


Three matrices of holes in an 11 mm thick bar. Hole diameters are 1.1 mm, 1.0 mm and 0.9 mm to test limiting in-plane spatial resolution.

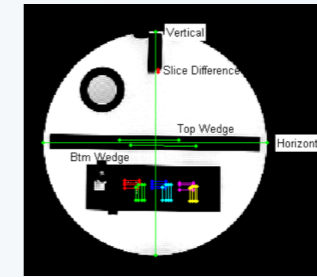
Counter Descending Wedges for Slice Thickness Accuracy



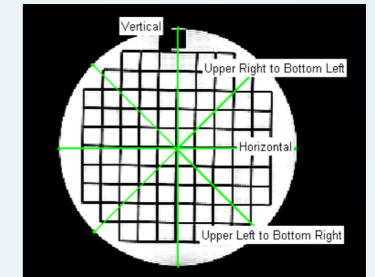
RIT Software Analysis of ACR Large MR Phantom Images



Localizer
Line Length



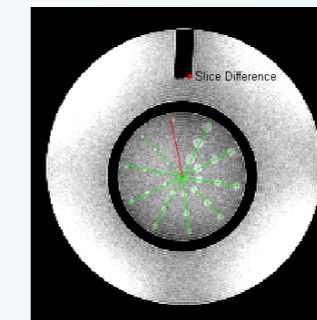
Slice 1
Geometric Accuracy
Resolution
Slice Thickness
Slice Difference



Slice 5
Geometric Accuracy







Slice 7
Percent Integral Uniformity



Slices 8,9,10 and 11
Spokes Detected
Contrast to Noise Ratios



	Batch processing of images
	Automated tracking, trending, and reporting
	Compare your results with other centers around the world.
 Cerberus File Watcher	Monitors folders and processes incoming files without you lifting a finger or even being present.
Monitor Image Quality	SMPTE pattern and TG18 images
Manual Measurements	Distance, angle, profile, histograms, round and
Output formats	Print, PDF, Excel (with custom templates), XML
Image Transfer	Built in image FTP function