

## **Acceptance testing and QC of MRI systems**

This presentation is prepared to assist the qualified medical physicist in defining an acceptance test strategy and specific quality control tests for clinical MRI systems. The goal of this presentation is to provide suggestions for a set of basic quality control tests that qualified medical physicists can perform independently on any MRI system.

Basic quality control tests include physical measurements of the following parameters: (1): static Magnetic Field Homogeneity (MFH), (2): Percent Image Uniformity (PIU), (3): Signal to Noise Ratio (SNR) and SNR uniformity, (4): Percent Signal Ghosting, (5): Geometrical Distortion/Spatial Linearity, (6): Slice Thickness and slice position/separation, (7): High Contrast Spatial Resoluituon (HCSR) and (8): Low Contrast Object Detectability (LCOD).

The definitions, the factors affecting the measurement parameter, the methods of measurements (phantoms, scan conditions and analysis) and the acceptance criteria for each measurement parameter are presented and discussed.

A practical guide containing acceptance testing procedures and quality control tests based on a daily, monthly and yearly basis is also presented.

### **(Learning Objectives)**

- 1.** To present an overview of the role of a qualified Medical Physicist in clinical MRI systems' acceptance testing and Quality Control.
- 2.** To present a practical Acceptance testing and Quality Control protocol that could be applied in any clinical MRI system.