Abstract

Magnetic Resonance coil is one of the limitation and degradation of image quality in Medical Imaging. Ghosting, Artifacts, and noise are the main consequence of the mismatch of the receiving coil. Human body parts have deferent permittivity and permeability which cause a variation of the self-resonance inductance.

In this paper, the effects of variable material filled in brain coil is studied and measured. The different arrangement also performed. The results show a noticeable variation of the self-resonance inductance which yields drifting the operating frequency by 122 KHz which is beyond the bandwidth of the MRI signal and instrument. One of the solutions is the auto-tuning algorithm, which is the only available solution. As a proposed solution, a cylindrical slab with high relative permittivity can be used inside the coil winding which reduce the variation of the operating frequency.

**Index Terms**

**Computer Science**

**Circuits and Systems**

**Keywords**

MRI, Receiving Coils, Q Point.