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ACQUISITION OF MR DATA WITH SEQUENTIAL SELECTION OF RESONANT MODES OF THE RF COIL ASSEMBLY (US 14/115,676 05/11/2013)

Settori di applicazione industriale / Fields of use

Biomedicale, Diagnostica, Risonanza Magnetica Nucleare
Biomedical Sector, Diagnostics, Nuclear Magnetic Resonance

CONTATTI

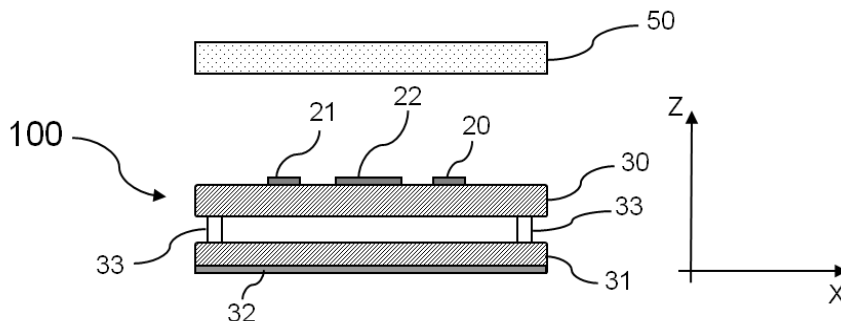
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Riferimenti Bibliografici / Bibliographic references

A.Vitacolonna, M. Alecci, "A Theoretical Study on the Frequency Modes Separation of Double Tuned TEM Resonators", *Proc. International Society of Magnetic Resonance in Medicine*, 16th Scientific Meeting, Toronto, Canada, May 5-9, pg. 2982 (2008).

M. Alecci, "Design and Optimization of Double Tuned Radio Frequency Coils for High-Field Magnetic Resonance Imaging", *XXIVth International Conference on Magnetic Resonance in Biological Systems*, 22-27 August, Cairns, Australia, pg. 135 (2010).

M. Alecci, "A Study on the Effect of Optimized Inductive Coupling on the High-Frequency Spectrum of 4T Double-Tuned Volume TEM Resonators", *IV European Conference of medical Physics on Advances in High Field Magnetic Resonance Imaging*, 3-25 September, Udine, pg. 79 (2010).



DESCRIZIONE / DESCRIPTION

Method for acquiring magnetic resonance data from a sample to be analyzed, comprising:

- a step of arranging the sample in the proximity of at least one radiofrequency coil;
- a first step of synthesizing through a control unit a first control signal;
- a first step of acquiring a first magnetic resonance signal from the sample;
- a second step of synthesizing through the control unit a second control signal;
- a second step of acquiring a second magnetic resonance signal from the sample.

The apparatus is a dual-tuned surface coil capable to receive, at the same time, the MRI signal of two different NMR-active nuclei present in the sample to analyse. The coil is a TEM antenna suitable for high-field MRI scanners and human imaging. As standard surface coils the invention has a very high sensitivity close to the coil itself. The advantage of the invention is a larger Field of View (FOV) if compared with the state of the art and a better spatial overlap of the images reconstructed from the two nuclei signals. The above result is obtained with repeated acquisitions using more than one resonance mode to detect the signal from each nucleus. This is possible thanks to a new hardware that allows a fast and sequential selection of the coil resonant modes.