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MRI Coil Amplifiers (20120122, Dr. Tommy Vaughan)

Technology No. 20120122

IP Status: Issued US Patent; **Application #:** 14/102,467

Amplifies Transceiver Antenna Elements

A magnetic resonance imaging (MRI) method and apparatus amplifies radio frequency (RF) signals from MRI coils. The coils, containing antenna elements, are power amplified by a distributed power amplifier with electronic devices (e.g., field-effect transistors). The approach locates an MRI coil with antenna elements within an MR magnet and amplifies its RF signal to obtain high-power RF pulses. These amplified pulses are then thermally and/or mechanically coupled to their respective antenna elements to form a hybrid coil-amplifier for MRI or spectroscopy machines.

High Magnetic and Electric Field Compatible

The amplification can be performed remotely, as can adjustments of the gains, electrical resistances, inductances and/or capacitances that control the magnitude, phase, frequency, spatial profile, and temporal profile of the RF signal. The components of this technology are compatible with/function in high magnetic fields (up to and exceeding one tesla or even ten tesla or more, and/or an electric field of many thousands of volts per meter).

BENEFITS AND FEATURES:

- Amplifies RF signals from MRI coils
- High-power RF pulses coupled to antenna elements form a hybrid coil-amplifier
- Remotely controlled amplification and adjustments
- Compatible with high magnetic fields and/or electric fields of thousands of volts per meter

APPLICATIONS:

- High magnetic fields
- Magnetic resonance imaging (MRI)
- Spectroscopy machines

Phase of Development - Prototype development

Researchers

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The University relies on industry partners to scale up technologies to large enough production capacity for commercial purposes. The license is available for this technology and would be for the sale, manufacture or use of products claimed by the issued patents. Please contact us to share your business needs and technical interest in this MRI technology and if you are interested in licensing the technology for further research and development.

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