

## Rapid B1 + Magnetic Resonance Imaging (MRI) Mapping

USC Case #3804

### Market Opportunity:

Magnetic resonance imaging (MRI) requires placing the region of interest (ROI) in a static magnetic field, exciting nuclear spins in the object with a RF magnetic field, and then detecting the signals emitted. For in-vivo high-field MRI ( $\geq 3T$ ), it is important to consider the homogeneity of the active RF field. During the excitement phase, a non-uniform field is created. This non-uniformity of excitation fields causes image contrast to vary within an image, making interpretation and quantification difficult. In high-field abdominal, cardiac, and neuro imaging, inhomogeneity of excitation fields on the order of 50% has been observed. Current methods to address non-uniformity are limited by long imaging times and motion compensation issues.

### USC Solution:

USC researchers have developed a rapid imaging technique capable of excitation mapping in moving body parts such as the chest and abdomen. This method is substantially faster and corrects the inhomogeneity of excitation fields.

### Value Proposition

- Faster imaging than market leader
- Allows imaging of moving body parts
- Increases diagnostic accuracy

### Keywords:

High-field imaging, pre-scan calibration, parallel imaging, magnetic resonance imaging (MRI), pulse sequences, radiofrequency mapping



### Applications

- Medical imaging
- MRI scanners

### Stage of Development

- Experimentally validated
- Available for exclusive and non-exclusive license

### Intellectual Property

#### Status:

Utility patent  
[US 7,446,526](#)

#### Key Publications:

[Saturated double-angle method for rapid B1+ mapping, MRM 2006](#)

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