

Magnetic Resonance Imaging (MRI) is a non-invasive medical imaging technique. As low-field MRI systems become more common and affordable, ongoing development of advanced coil technologies remains vital, ensuring reliable chest imaging, especially for patients who may not tolerate high-field MRI environments. These findings underscore the continuous drive to develop optimized coil systems capable of compensating for the physical limitations inherent to low-field MRI, especially in chest imaging where motion and low proton density pose additional hurdles. This process involves aligning hydrogen atoms in a strong magnetic field, with radiofrequency (RF) coils then capturing signals to construct images. Studies consistently show specialized chest coils significantly boost SNR and spatial resolution, even at lower magnetic field strengths. Research affirms a well-designed coil dramatically enhances diagnostic results through increased signal sensitivity and clearer anatomical views. Low-field MRI systems (0.55–1 Tesla) inherently exhibit a lower signal-to-noise ratio (SNR) and demand extended scan durations compared to high-field systems. Despite downsides like reduced detail and difficulty detecting small lesions, low-field MRI offers advantages in safety and patient accessibility. It uses non-ionizing radiation to produce detailed internal organ images.