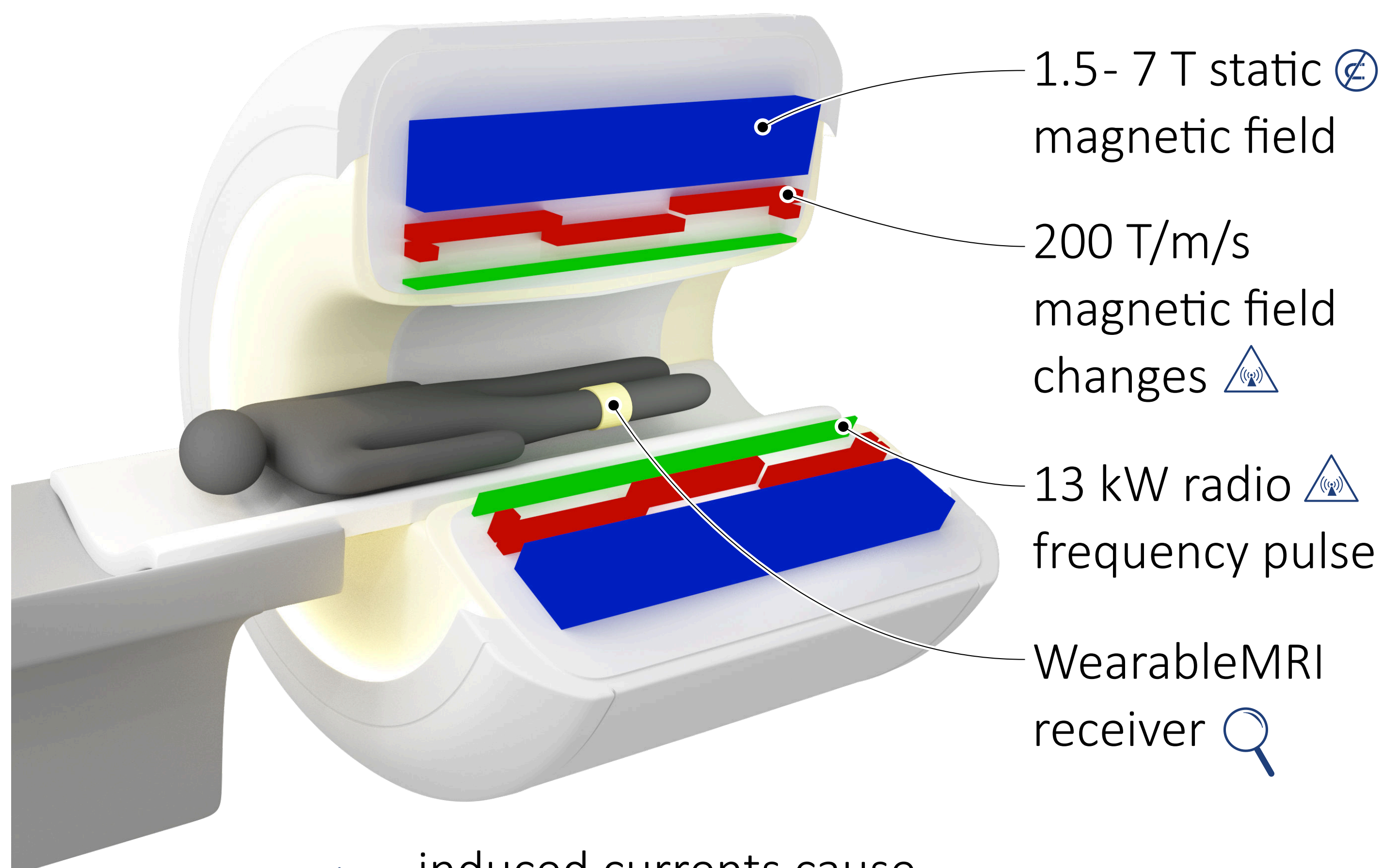
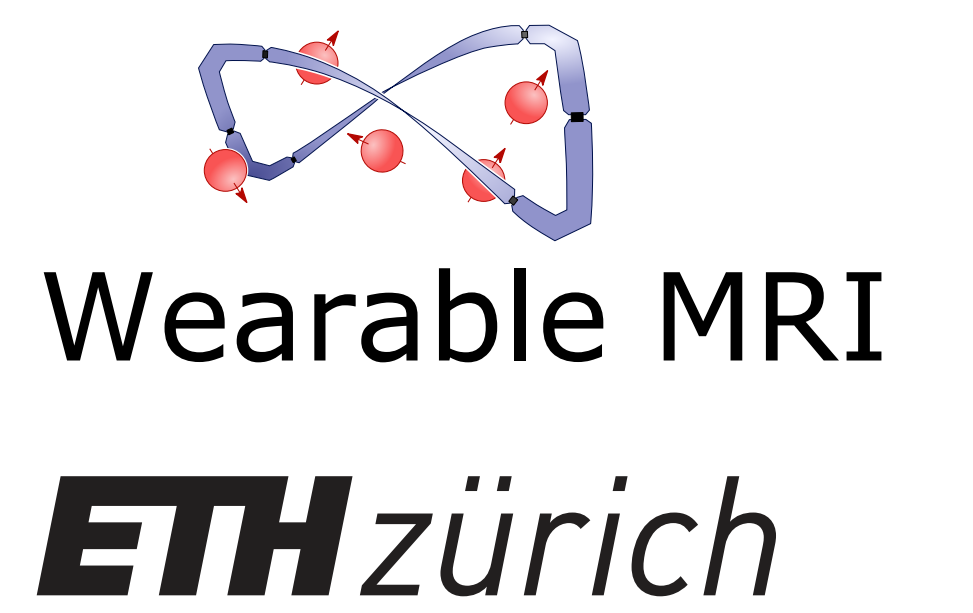


A wearable MRI receiver

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- ∇ induced currents cause electrical noise and joule heating
- \otimes Ferro-magnetic components distort field and cause image artefacts/distortions

Challenges

MR receive antenna with detune and matching networks

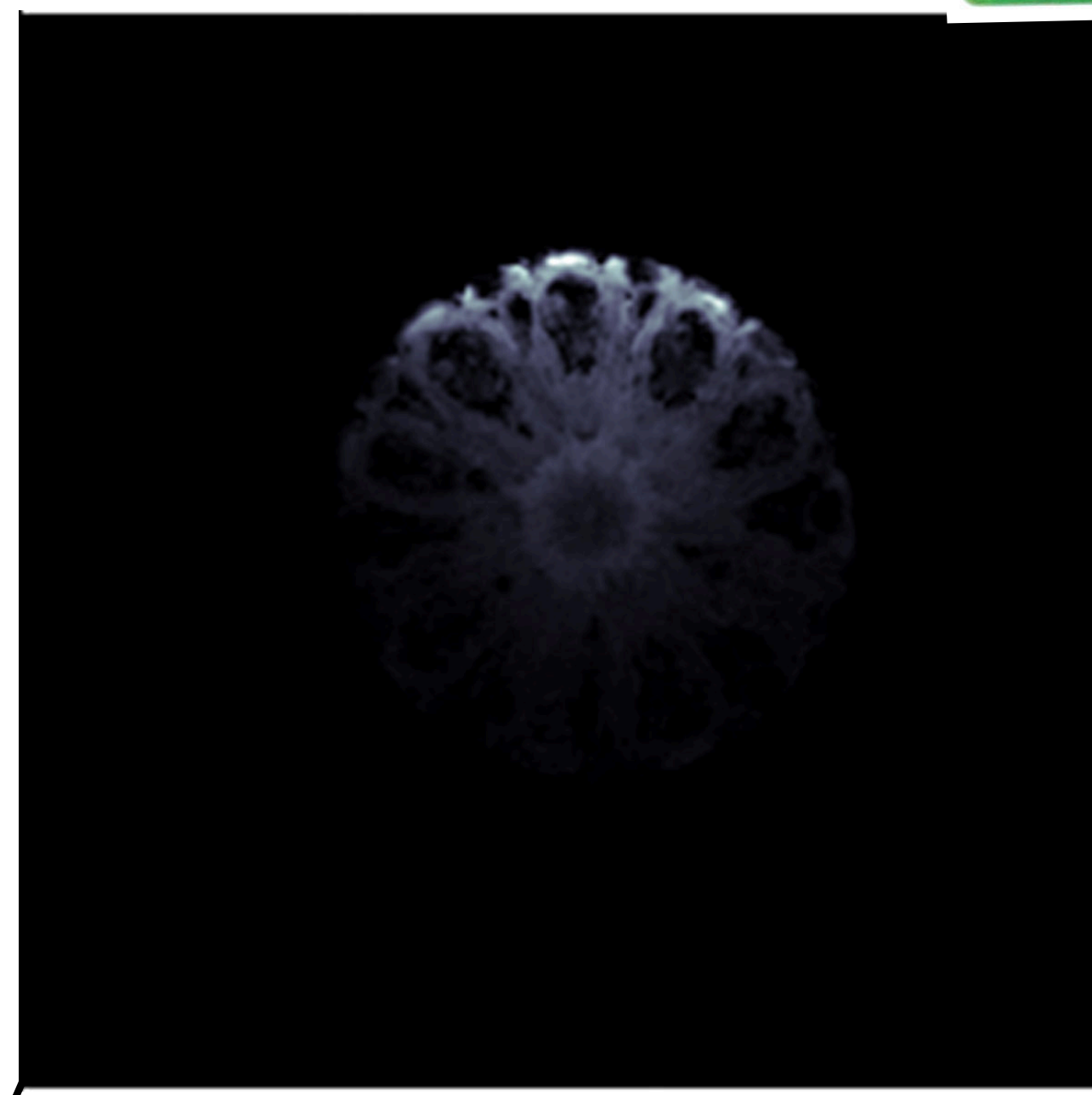
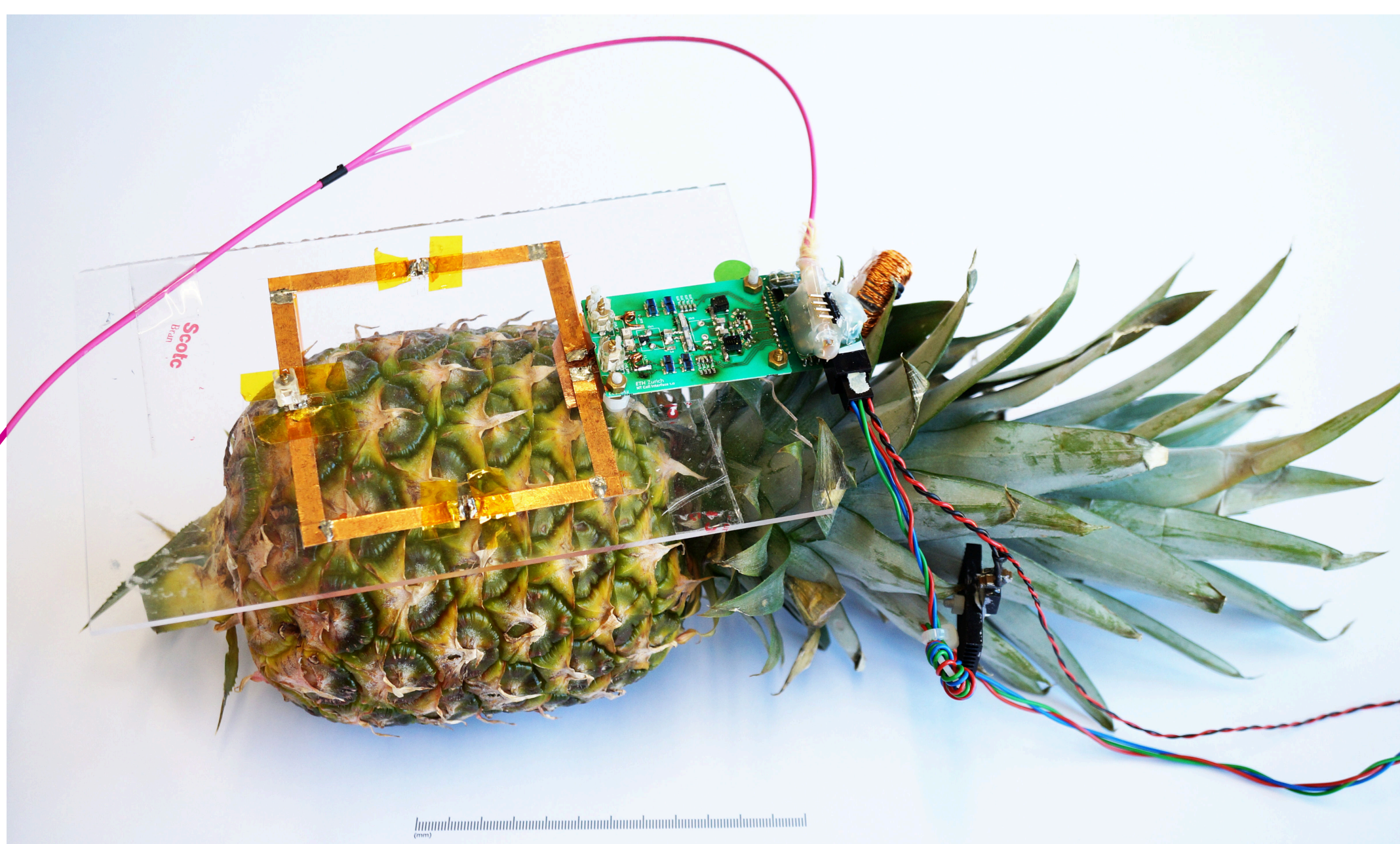
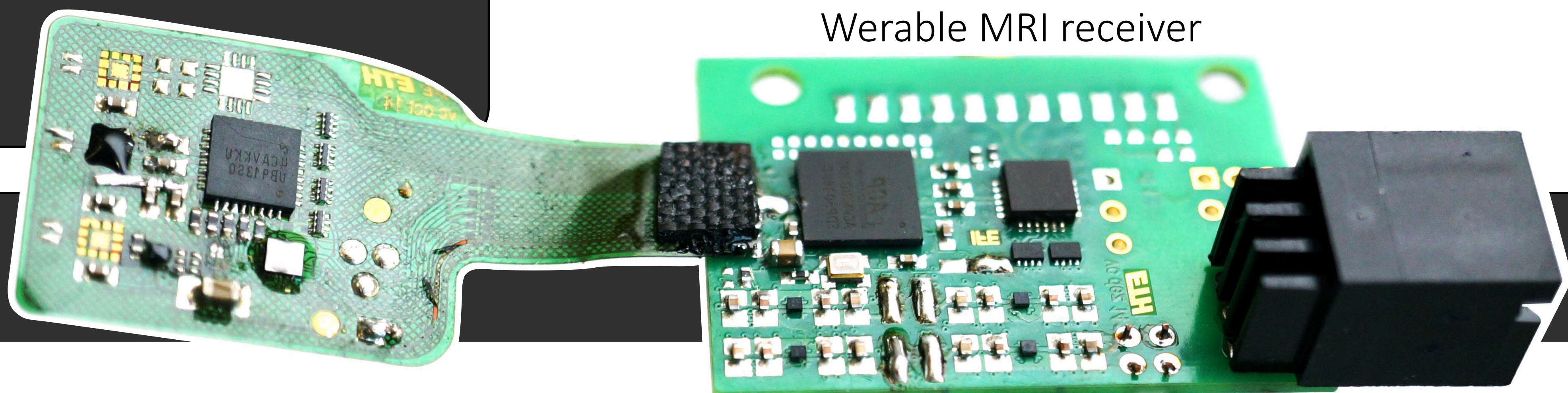
Optimized PCB layout for reduced eddy current induction

Custom designed receiver and LNA chips

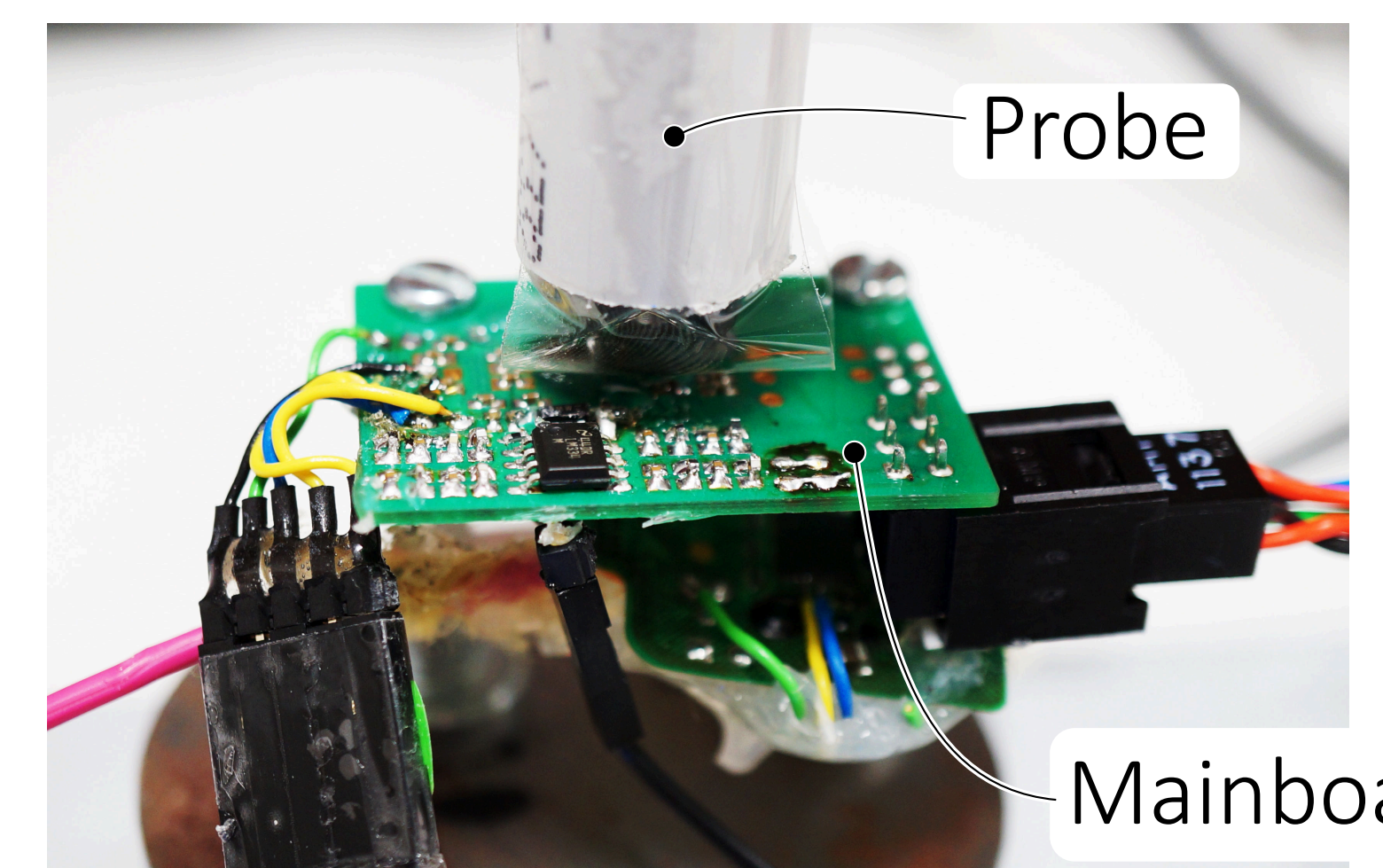
miniaturized fiber optic link

System overview

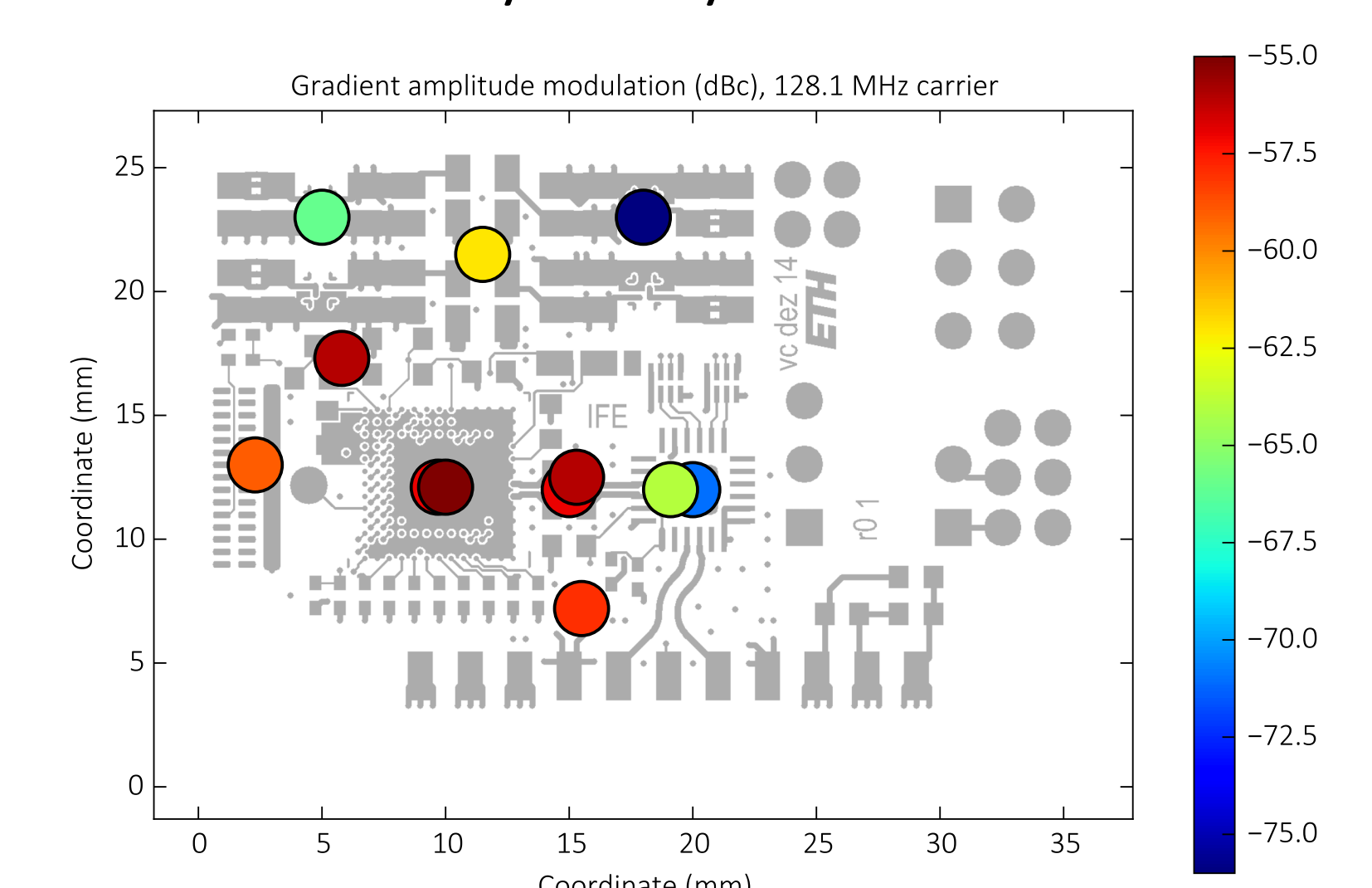
Results



Test system to evaluate influence of MR operation on circuit



Area around MR receiver chip influenced most by eddy current noise



End of static magnetic field (MRI room)

Data recording and offline computing

Pineapple outfitted with the WearableMRI receiver, custom antenna and detune network. Placed inside MRI scanner as test object

- WearableMRI device operates during MRI scan sequence without fault due to optimized layout and geometry
- Device shows no significant heating due to RF and gradient fields
- Electrical influence of switching fields on measurements lower than 60 dB with respect to MR signal