

RF Coil Design Report: 3T Head Coil Element

Generated: 2026-01-09 11:59:12

Target System: 3.0 Tesla MRI

Larmor Frequency: 127.74 MHz

ELECTRICAL SPECIFICATIONS:

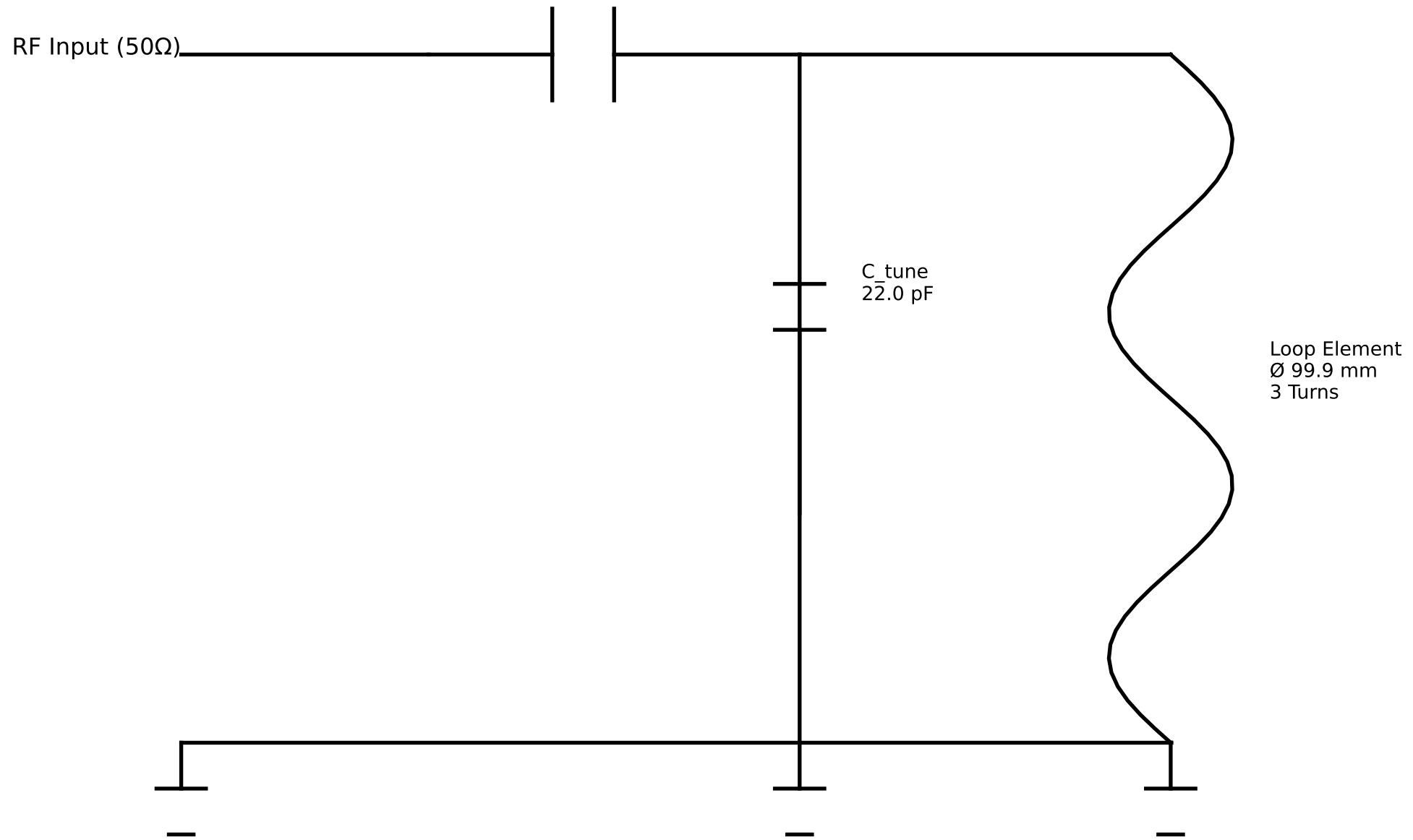
Topology: Single Loop LC Resonator
Inductance (L): 70.57 nH
Capacitance (C): 22.0 pF (Tuning)
Resonance: 127.74 MHz
Q-Factor (Est): > 200 (Unloaded)

GEOMETRIC SPECIFICATIONS:

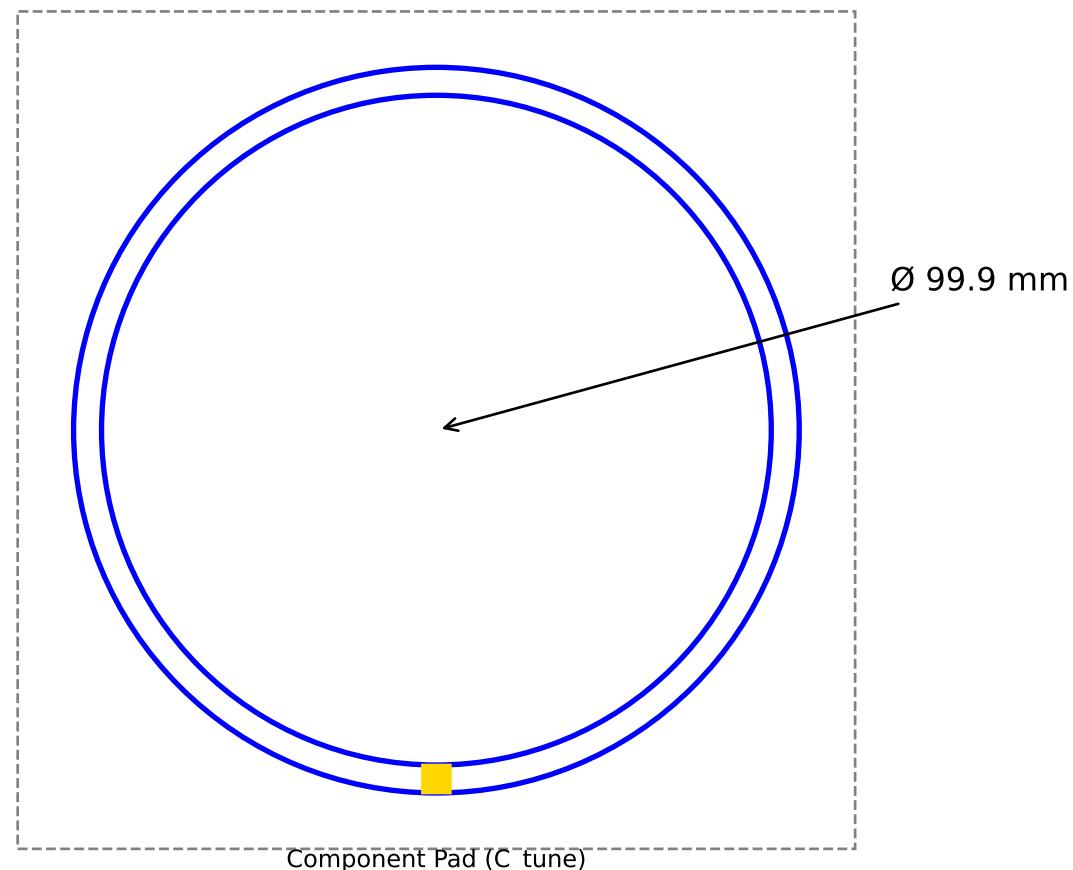
Diameter: 99.86 mm
Turns: 3
Trace Width: 4.0 mm
Substrate: Pyralux / FR4

C_{match}
 $\sim 55 \text{ pF}$

Circuit Schematic: 127.74 MHz Tuned Trap

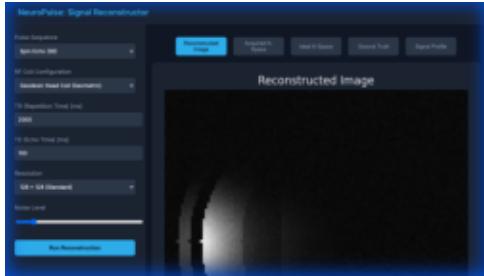


PCB Fabrication Layout (Top Copper)



Simulation Verification Data

MRI Reconstruction Output



Solenoid Circuit Verification



Geodesic Circuit Verification

