



Wireless sensing of open loop micro inductors using Helmholtz coil

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Abstract- This paper reports wireless sensing of open loop micro inductors parameters i.e. distributed capacitance, inductance, resistance and Q factor in presence uniform magnetic fields generated by Helmholtz coils pair. A frequency dependent analytical model is developed which models the inductively coupled system including the effects generated by the presence of test micro coil in uniform magnetic field. Micro inductor parameters are extracted from the remotely measured impedance signal and compared with the developed modeled. Further to visualize the magnetic field coupling

effects and numerically compute the micro inductor parameters, FEM simulation is performed using HFSS and COMSOL Multiphysics.

Index terms: *Magnetic coupling, Helmholtz coils, micro inductors, HFSS.*