A compact Hertzian dipoles multiport model for near-field MIMO system assessment

The information flow rate in chips and also on circuit boards of modern electronic systems has developed into a bottleneck. Wireless ultrawideband (UWB) multi-input-multi-output (MIMO) chip-to-chip communication may provide a solution to this problem. The physical modeling of near-field MIMO systems requires network-oriented modeling accounting for the reciprocity of near-field MIMO antenna configurations. In this work we investigate a compact circuit model to assess near-field MIMO configurations and study a 2 × 2 MIMO test configuration for its potential with respect to its channel capacity under parameter variation concerning antenna positions and scatterers within the signal path.

MIMO communication, Dipole antennas, Impedance, Integrated circuit modeling, Transmitting antennas, Receiving antennas