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| **Abstract:** |  |
| The research on high-efficient non-radiant wireless power transmission (WPT) system using high quality factor resonant coupled coils has become remarkable for powering various portable household devices, biomedical implants, and electrical vehicles since last decade. Therefore, practical WPT must be able to support complicated coil configurations and keep following magnetic resonant conditions with maximum power transfer capability during coupling distance variation. In this paper, an adaptive two-side impedance matching technique using self-tuned L-matching circuits at both the transmitting and receiving sides is proposed for maximizing transmission efficiency in resonant coupled WPT system. The tuning value of inductance and capacitance for matching networks are derived based on the Q-based design principle and extracted impedance ratios and S-parameters. The feasibility of the theoretical model is testified against simulation and measured data. The developed model shows that using two-side matching technique maximizes transmission efficiency over 80% for a range of 15~35 cm. The proposed technique also successfully retains the resonant frequency and has much more potential to provide maximum efficiency for the resonant coupled WPT system. | |