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Beaming of Inductive Field with an Asymmetric Four-Coil Resonator for Wireless Power Transfer (Conference Paper)

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Abstract

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This paper suggests a high efficiency inductive wireless power transfer system can be achieved by improving beaming field . Theoretical analysis, simulation results and experimental results are presented in this report. The coupling coefficient is enhanced through the use of multi-coils on the primary, ensuring a long distance transfer over a wide operating frequency range. It is a significant technique to overcome the shortcomings of wired charging. A prototype is constructed and the optimum air gap between the primary side and the secondary side for the power transmission is 15mm with 60 kHz of switching frequency. The results obtained reveals that asymmetric 4-coil resonator has greater power transfer efficiency for a similar gap compared to symmetric 4-coil resonator as the source coil effective inductance is boosted two times by intermediate coils at the primary side. © 2018 IEEE.

SciVal Topic Prominence

Topic: Radio | Electric vehicles | resonant wireless

Prominence percentile: 99.796

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Multi-coil resonator | Wireless charging | Wireless Power Transfer (WPT)

Indexed keywords

Engineering controlled terms: Efficiency | Electric power systems | Energy transfer | Resonators

Engineering uncontrolled terms: Coupling coefficient | Inductive field | Multi-coils | Operating frequency | Power transfer efficiency | Wireless charging | Wireless power transfer | Wireless power transfer (WPT)

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