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(54) **DUAL-MODE ANTENNA WITH NON-UNIFORM COIL ARRAY FOR WIRELESS POWER TRANSMISSION AND METHOD THEREOF**

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(57) **ABSTRACT**

Dual-mode transmitter antenna with non-uniform coil array for wireless power transmission is disclosed. The dual mode antenna comprises a primary coil located at center of the dual-mode transmitter antenna and configured to generate concentrated uniform magnetic field in a first mode and a second mode of operation. The dual mode antenna further comprises a plurality of secondary coils surrounding the primary coil and located at the periphery of the dual-mode transmitter antenna, and a switching circuit electrically coupled to the primary coil and the plurality of the secondary coils. The switching circuit is configured to detect a lateral misalignment between the dual-mode transmitter antenna and a receiver antenna and activate the plurality of secondary coils in the second mode of operation in response to detecting lateral misalignment between the dual-mode transmitter antenna and the receiver antenna. The plurality of secondary coils are configured to generate an extensive uniform magnetic field.

[FIG. **2**]

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