US 20220360111A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2022/0360111 A1**

Rehm (43) **Pub. Date: Nov. 10, 2022**

(54) **COUPLING OPTIMIZED ELECTRICAL WIRELESS POWER TRANSMISSION**

(71) Applicant: **Markus Rehm**, Villingen-Schwenningen (DE)

(72) Inventor: **Markus Rehm**, Villingen-Schwenningen (DE)

(21) Appl. No.: **17/845,413**

(22) Filed: **Jun. 21, 2022**

Related U.S. Application Data

(62) Division of application No. 16/519,227, filed on Jul. 23, 2019, now Pat. No. 11,411,434, which is a division of application No. 14/757,186, filed on Dec. 2, 2015, now Pat. No. 10,411,511.

(30) **Foreign Application Priority Data**

Dec. 29, 2014 (DE) 10 2014 019 621.6

Publication Classification

(51) **Int. Cl.**
H02J 50/12 (2006.01)
H02J 50/40 (2006.01)

(52) **U.S. Cl.**
CPC ***H02J 50/12*** (2016.02); ***H02J 50/40*** (2016.02); *H02J 50/005* (2020.01)

(57) **ABSTRACT**

In a first aspect of the current invention, a receiver circuit for a wireless power transmission link is proposed, wherein while maintaining substantially resonant coupling condition (resonance frequency of the transmitter unit is substantially equal to the resonance frequency of the receiver unit) the coupling is electronically controlled and optimized such that maximal critical coupling occurs.

In a further aspect of the invention, the coupling between the transmitter unit and receiver unit is optimized by transforming of at least one receiver load such that maximal critical coupling occurs and overcritical coupling is avoided.

In a further aspect of the invention, the coupling between the transmitter unit and receiver unit is optimized by transforming of at least one receiver load by means of boost- and/or buck converters such that maximal critical coupling occurs.