US 20170117753A1

(19) United States

(12) Patent Application Publication

Charthad et al.

(10) Pub. No.: US 2017/0117753 A1

(43) Pub. Date: Apr. 27, 2017

(54) **DYNAMIC RECONFIGURATION FOR MAXIMIZING THE OVERALL LINK EFFICIENCY OF ENERGY RECEIVERS IN A RELIABLE IMPLANTABLE SYSTEM**

(71) Applicant: **The Board of Trustees of the Leland Stanford Junior University**, Palo Alto, CA (US)

(72) Inventors: **Jayant Charthad**, Stanford, CA (US); **Marcus J. Weber**, Palo Alto, CA (US); **Mohammad Amin Arbabian**, San Francisco, CA (US); **Ting Chia Chang**, Stanford, CA (US)

(21) Appl. No.: **15/282,417**

(22) Filed: **Sep. 30, 2016**

Related U.S. Application Data

(60) Provisional application No. 62/244,456, filed on Oct. 21, 2015.

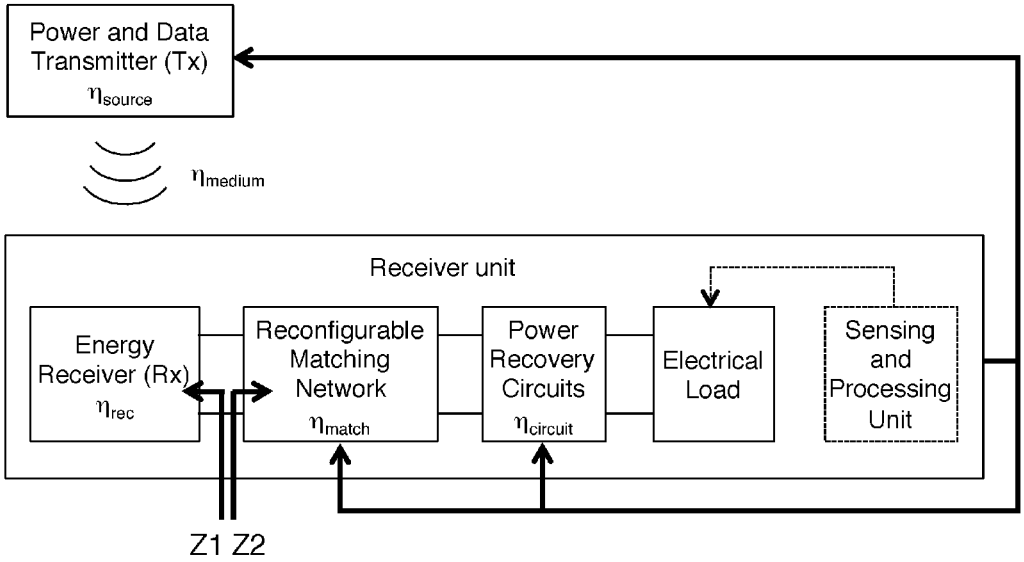
Publication Classification

(51) **Int. Cl.**

H02J 50/15	(2006.01)
A61B 5/01	(2006.01)
A61B 5/07	(2006.01)
A61N 1/372	(2006.01)
A61B 5/03	(2006.01)
A61B 5/145	(2006.01)
A61B 5/00	(2006.01)
A61H 21/00	(2006.01)
H02J 7/02	(2006.01)
A61B 5/04	(2006.01)

(52) **U.S. Cl.**

CPC ***H02J 50/15*** (2016.02); ***H02J 7/025*** (2013.01); ***A61B 5/01*** (2013.01); ***A61B 5/076*** (2013.01); ***A61B 5/04001*** (2013.01); ***A61B 5/036*** (2013.01); ***A61B 5/14503*** (2013.01); ***A61B 5/4845*** (2013.01); ***A61H 21/00*** (2013.01); ***A61N 1/37217*** (2013.01); *H02J 7/345* (2013.01)

(57) **ABSTRACT**

Efficient power transmission from an acoustic transmitter to an electrical load on an implanted device is provided using a control system that at least varies the transmitted acoustic frequency. Varying the transmitted frequency can change the electrical impedance of the acoustic transducer in the receiver that receives power from the transmitter. This ability to vary the transducer impedance can be used to optimize power delivery to the load.