

POWER AND INTERFERENCE RECYCLER FOR WIRELESS COMMUNICATING DEVICES

Current mobile phones, tablets, and other personal electronic devices in today's market do not have sufficient battery charge capacity to last an average day of use. People have resorted to carrying wall chargers and batteries to plug in their phones several times a day. However, convenient access to a charging port is not always possible, forcing users to reduce their mobile device activities in order to conserve battery charge.

THE TECHNOLOGY

Researchers at The Ohio State University, led by Dr. Can Emre Koksall and Dr. Ness Shroff, formulated an innovative charging system that harvests unused wireless signals transmitted from the device and converts it into Direct Current (DC) to charge mobile devices. This system:

- Increases the battery life of mobile phones by more than 20%
- Reduces multiuser interference
- Slows battery drain rate when the energy harvesting system is used
- Uses self-generated radio frequency (RF) as well as external RF to charge
- Improves per-cell uplink throughput by up to 100 kilobytes/sec by suppressing interference at the mobile user equipment.

This technology harvests only the interference portion of the emitted signal, thereby improving the lifetime of the user equipment and reducing the uplink interference observed at the base stations. The embodiment for full-duplex communication systems enables more effective suppression of self-interference.

INVENTORS

Dr. Koksall is an Associate Professor at The Ohio State University in the Department of Electrical Engineering. He has been published in a variety of IEEE publications for his work on wireless networking and security. His research interests include energy management and information theory.



Dr. Shroff is a Chaired Professor at The Ohio State University in the Department of Electrical & Computer Engineering and Computer Science and Engineering. He has been published in a variety of IEEE publications for his work on wireless networking and security. His research interests include communication, social, and cyberphysical networks.

THE MARKET

- Globally, an estimated 210 million external portable product battery chargers were sold in 2011, with an expected 230 million units in 2016 (BCC Research).
- The telecommunications industry predicts a significant growth in global data traffic, with a several thousand-fold increase by 2020.
- The international market for portable product battery chargers is expected to grow from \$480 billion to \$611 billion in 2016 at a five-year CAGR of 4.9% (BCC Research).

CONTACTS

CDME

1314 Kinnear Road, Columbus OH, 43212

cdme.osu.edu

Eric Wagner, Collaboration Manager
wagner.293@osu.edu • 614-477-0303

Technology Commercialization Office

Christopher Wohlgamuth, Licensing Manager
wohlgamuth.5@osu.edu • 614-247-8331