



LONG DISTANCE WIRELESS RADIO TAG WITH RF ENERGY HARVESTING

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Overview

The range of passive RFID tags is constrained by three factors. The first is that the reflected energy to the reader rapidly decreases with distance between the reader and the RFID tag both with respect to the forward path from the reader to the RFID tag and in the reverse path of reflection (dual path loss). The second factor is the reduction in energy available for harvesting by the RFID tag as the distance between the RFID tag and reader increases, this energy being necessary to activate the RFID tag electronics (energy harvesting range). The third factor is a self interference at the RFID tag reader between its own transmitted signal harvested by the RFID tag and the reflected signal from the RFID tag, this interference limiting the sensitivity of the reader (self-interference).

The Invention

UW Madison researchers have developed a radio tag that can harvest radio energy from a querying device and use this for active one-directional communication, overcoming the problem of dual path loss. Longer-range communication using such harvested energy is made practical by using a query process where the information defining the communication is primarily contained in a query to the radio tag allowing the transmission from the radio tag to be short and energy efficient. The exciting RF energy source (providing the energy for harvesting and the query) can also be separated from the tag reader, overcoming the problems of energy harvesting range and self interference as well as greatly increasing the number of tags that can be serviced by a given reader.

Additional Information

For More Information About the Inventors

- [Bhuvana Krishnaswamy](#).

Tech Fields

- [Analytical Instrumentation, Methods & Materials : Sensors](#)
- [Information Technology : Networking & telecommunications](#)

For current licensing status, please contact Emily Bauer at emily@warf.org or 608-960-9842

