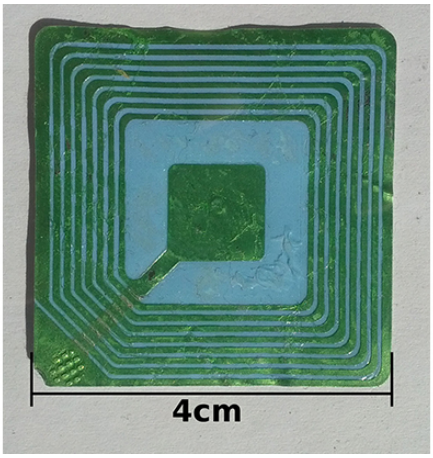
Wearable RFID Tag for Robust Communication and Energy Harvesting

ID# 2015-4301



Sample RFID tag

Technology Summary

The disclosed design is a low-profile, small form-factor, and lightweight solution for wearable ultra high frequency RFID tags. Previous tag antennas have failed to overcome the problem of the human body loading effect: when the antenna is located in close proximity to the body the input impedance and radiation gain are significantly affected. In this novel design, however, when the body is in close proximity to the tag antenna, the real part of the impedance increases without affecting the reactance, thereby leading to an increased power transmission of about 70%. For a 30×35 sq. mm and 5mm thick tag antenna, a read range of about 8-10m can be achieved. In addition, the tag antenna can also be designed to match to 50 Ohm load, which would allow operation in both an energy harvesting and a communication mode.

Application & Market Utility

The tracking using RFID technology has been found to be of great interest for a wide variety of applications including patient monitoring, remote healthcare, fire fighter rescue, and indoor/outdoor access. In contrast to conventional RFID technology, the presence of the human body does not adversely affect performance, leading to increased operational range. Further, this RFID antenna has higher gain than competing designs, allowing for more efficient operation.

Next Steps

Covered by U.S. Patent 9,710,746. Seeking licensing opportunities.

TECHNOLOGY READINESS LEVEL 4-7

Seeking

Investment | Licensing | Research

Keywords

- wearable RFID
- light weight
- energy harvesting
- communication
- body area network

Researchers

Doulgas Werner
Professor of Electrical Engineering and Computer Science
Online Bio
Website

Zhihao Jiang
Post-doc
Website

Originating College
College of Engineering

Office of Technology Management Contact
Rokita, Joseph
jjr152@psu.edu
814-863-6336

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