

Accepted Manuscript

Title: A Broadband Electromagnetic Type Energy Harvester for Smart Sensor Devices in Biomedical Applications

Authors: Muneeb Ullah Anjum, Adnan Fida, Iftikhar Ahmad, Adnan Iftikhar



PII: S0924-4247(18)30255-3
DOI: <https://doi.org/10.1016/j.sna.2018.05.001>
Reference: SNA 10762

To appear in: *Sensors and Actuators A*

Received date: 9-2-2018
Revised date: 28-4-2018
Accepted date: 2-5-2018

Please cite this article as: Anjum MU, Fida A, Ahmad I, Iftikhar A, A Broadband Electromagnetic Type Energy Harvester for Smart Sensor Devices in Biomedical Applications, *Sensors and Actuators: A. Physical* (2010), <https://doi.org/10.1016/j.sna.2018.05.001>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

A Broadband Electromagnetic Type Energy Harvester for Smart Sensor Devices in Biomedical Applications

Muneeb Ullah Anjum^a, Adnan Fida^a, Iftikhar Ahmad^b and Adnan Iftikhar^a

^aElectrical Engineering Department, COMSATS Institute of Information Technology, Islamabad (45550), Pakistan

^bFaculty of Mechanical Engineering, Ghulam Ishaq Khan Institute of Engineering Science and Technology, Topi (23460), KPK, Pakistan

Highlights

- The EM-EH, capable of delivering multiple output voltages at different acceleration levels is designed and fabricated.
- The prototype is capable to charge a fully discharged lithium ion battery in one and half hours using simple human body motions
- The proposed prototype has novelty in terms of its ability to generate power in a wide bandwidth. This provides a continuous power supply even at low body motions

Abstract

This paper presents the design, fabrication and experimentation of a low power Electromagnetic Energy Harvester (EM-EH) having a broader bandwidth. The proposed prototype exploits the human body motion to generate power for the low profile smart biomedical devices. The working of the proposed EM-EH is illustrated in both laboratory and in the real-time environment. The prototype of EM-EH is fabricated through computer numerical control milling and turning machines. The device is tested in-laboratory at different acceleration levels, and it was inferred that the EM-EH when excited at 3 g induces a maximum voltage of 3800 mV at a resonant frequency of 20 Hz. The

Download English Version:

<https://daneshyari.com/en/article/7133312>

Download Persian Version:

<https://daneshyari.com/article/7133312>

[Daneshyari.com](https://daneshyari.com)