

Crack Detection using Chipless RFID Based Split Box Resonator

Aiswarya T, Dr. Sumi M, Harikrishnan A I

Department of ECE

NSS College of Engineering, Palakkad, Kerala

Abstract: *The notion of a chipless radio-frequency identification-based ubiquitous crack sensing technique for structural health monitoring is presented in this article. This plan includes the creation of a new sensor that can detect structural deformations at any point on its surface in a continuous or nondiscretized manner. The suggested sensor can detect the growth and spread of fractures in a building structure's region. A sensitive microwave structure consisting of cascaded innovative split box resonators is connected to a coplanar waveguide (CPW)-based transmission line in the smart skin sensor. This enables it to provide continuous fracture detection as well as the capacity to identify several structural disturbances at the same time.*

Keywords: Radio-Frequency Identification

REFERENCES

- [1]. Rajni Rajni, Amanpreet Kaur, and Anupma Marwaha. Crack detection on metal surfaces with an array of complimentary split ring resonators. *International Journal of Computer Applications*, 119:16–19, 06 2015.
- [2]. Nemai Chandra Karmakar, Emran Md Amin, and Jhantu Kumar Saha. *Chipless rfid sensors*. 2016.
- [3]. Adi Mahmud Jaya Marindra and Gui Yun Tian. Chipless rfid sensor tag for metal crack detection and characterization. *IEEE Transactions on Microwave Theory and Techniques*, 66(5):2452–2462, 2018.
- [4]. N Javed, MA Azam, and Y Amin. Chipless rfid multisensor for temperature sensing and crack monitoring in an iot environment. *IEEE Sensors Letters*, 5(6):1–4, 2021.
- [5]. Angus J Healey, Parya Fathi, and Nemai C Karmakar. Rfid sensors in medical applications. *IEEE Journal of Radio Frequency Identification*, 4(3):212–221, 2020.
- [6]. Shuvashis Dey, Rahul Bhattacharyya, Sanjay E Sarma, and Nemai Chandra Karmakar. A novel “smart skin” sensor for chipless rfid-based structural health monitoring applications. *IEEE Internet of Things Journal*, 8(5):3955–3971, 2020.