



Raghu kumar B S

Enhancing Myocardial Infarction Diagnosis: Insights from ECG Image Analysis and Machine Learning

Authors BS Raghukumar, B Naveen

Publication date 2024/4/18

Journal SN Computer Science

Volume 5

Issue 5

Pages 448

Publisher Springer Nature Singapore

Description This study is dedicated to extracting distinctive features from ECG graph images, which are vital for detecting myocardial infarction or heart attacks due to the variations observed in ECG signal images within ECG report images. These features serve as significant indicators for distinguishing between various cardiac conditions. The utilization of diverse machine learning techniques simplifies and expedites the diagnostic process considerably. These methods leverage the unique features extracted from ECG signal images to make the diagnosis more straightforward and quicker, reducing the time needed for evaluation. The authors identify and employ a set of 10 distinct features extracted from the ECG signal images. These features are subsequently applied to various classification algorithms to evaluate their effectiveness in diagnosing heart conditions. Among the classifiers tested, the Gradient Boosting Classifier ...

Scholar articles Enhancing Myocardial Infarction Diagnosis: Insights from ECG Image Analysis and Machine Learning
BS Raghukumar, B Naveen - SN Computer Science, 2024
Related articles

Senthil
Professor & Head
Dept. of Electronics & Communication Engg.
Adichunchanagiri Institute of Technology
Chikmagalur - 577 102



RESEARCH ARTICLE



Partial Ground-Based Miniaturized Ultra Wideband Microstrip Patch Antenna

OPEN ACCESS

Received: 17-10-2023

Accepted: 30-11-2023

Published: 12-01-2024

H S Rajappa^{1*}, D N Chandrappa², Rajendra Soloni³¹ Assistant Professor, Department of E&CE, AIT, Chikkarnagaluru, Visvesvaraya Technological University, Belagavi, Karnataka, India² Associate Professor, Department of E&CE, EPCET, Bengaluru, Visvesvaraya Technological University, Belagavi, Karnataka, India³ Associate Professor, Department of E&CE, JIT, Davangere, Visvesvaraya Technological University, Belagavi, Karnataka, India

Citation: Rajappa HS, Chandrappa DN, Soloni R (2024) Partial Ground-Based Miniaturized Ultra Wideband Microstrip Patch Antenna. Indian Journal of Science and Technology 17(2): 105-111. <http://doi.org/10.17485/IJST/v17i2.2622>

* Corresponding author.

rajjuhs05@gmail.com

Funding: None

Competing Interests: None

Copyright: © 2024 Rajappa et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Published By Indian Society for Education and Environment (iSee)

ISSN

Print: 0974-6846

Electronic: 0974-5645

Abstract

Objective: To implement a miniaturized ultra-wideband microstrip patch antenna for wireless applications. **Methods:** The antenna design is established on the FR-4 substrate with a relative permittivity of 4.4 and a thickness of 1.60 mm. The entire area of the projected antenna is $26.33 \times 19.39 \times 1.60 \text{ mm}^3$, and it is simulated in the CST MWS tool. An inset-fed patch and a modified ground plane are utilized to construct the antenna. **Findings:** The antenna's working frequency range is from 3.780 to 10.460 GHz with a peak gain of 4.8 dBi. The parameters such as VSWR, radiation patterns, return loss, and gain of the antenna are presented in this letter. **Novelty:** Designing an inset-fed patch antenna with a wide bandwidth is a challenge. Novelty can come from achieving a wider bandwidth than previously reported by optimizing the feed point location. The majority of the designed ultra-wideband antenna structures are complex with large sizes, but the existing antenna structure is implemented using an inset-fed patch and partial ground method. The fabricated antenna satisfies the desirable ultra-wideband performance in the 3.1–10.6 GHz frequency band. The antenna can be utilized for X-band, C-band, RFID, upper S-band, and satellite communication applications.

Keywords: Ultrawideband; Microstrip antenna; Partial ground plane; inset fed patch; Return loss; Radiation Patterns; Gain; VSWR

1 Introduction

In contemporary wireless communication systems, patch antennas have found widespread application due to their exceptional polarization characteristics and seamless integration with microwave integrated circuits. Within these systems, the microstrip antenna serves a dual purpose, functioning not only as a radiator but also as a resonator for power amplifiers within the active circuitry. Nonetheless, without meticulous design considerations to mitigate harmonic resonance and spurious emissions, this antenna has the potential to generate undesirable electromagnetic radiation, thereby impacting the overall performance of these systems⁽¹⁾. Ultra Wide-

Senthil
Professor & Head
 Dept. of Electronics & Communication Engg
 Adichunchanagiri Institute of Technology,
 Chikmagalur - 577 102

