Review of: "Investigations on Input Impedance and Radiation Pattern of a UWB Antenna for Microwave Imaging"

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Potential competing interests: No potential competing interests to declare.

The study delves into the thorough examination of an Ultra-wideband (UWB) antenna, emphasizing its input impedance, radiation pattern, and potential applications. Fabricated on an FR4 printed circuit board with a rectangular aperture, the antenna's design is meticulously analyzed to elucidate its performance characteristics. The significance of UWB technology and the antenna's pivotal role therein are duly highlighted.

The investigation meticulously evaluates various parameters crucial to the antenna's efficacy. Notably, the antenna demonstrates commendable impedance bandwidth, with a return loss of -10dB observed across a wide frequency range spanning from approximately 4GHz to 10.6GHz. However, variations in the width of the T-shaped stub affect this bandwidth, indicating a nuanced relationship between design elements and performance outcomes.

Employing advanced simulation tools such as CST Microwave Studio, the study optimizes the antenna's design to enhance its performance metrics. This computational approach facilitates meticulous fine-tuning, ensuring optimal functionality across the UWB spectrum. The utilization of such tools underscores the study's commitment to precision and reliability in its findings.

The antenna's operational bandwidth spans a significant portion of the UWB spectrum, ranging from 3.1GHz to 10.6GHz. Within this range, the antenna exhibits robust performance, particularly excelling between 4GHz to 10.6GHz, where an operational bandwidth of 6.6GHz is achieved. Importantly, the antenna maintains well-matched input impedance, as evidenced by a return loss of 10dB within the critical frequency range of 4-10.6GHz. This characteristic ensures efficient power transmission, with minimal energy reflected back.

In summary, the research done on the UWB antenna provides important information on its construction, functionality, and optimisation. Promising features of the antenna include good radiation patterns, efficient impedance matching, and a wide impedance bandwidth. The study also emphasises how critical sophisticated simulation methods are to optimising antenna designs for improved performance. All things considered, the results provide a substantial contribution to the development of UWB technology and all of its applications, and they hold out hope for more advancements in the field of wireless communication.

However, there are a few issues that object me in recommending this research paper for the next round, I mean to say that the following changes are needed.

a. There are a good number of works that need to be included in the reference**Ex:** Kumar, Prathipati R.; Swamy, Banothu Yedukondala Venakta Naga Raja; Hari Prasad, Bapi Siva; Krishna, Kasakani Rama; Babu, Alur Narendra; Brahmanandam, Potula Sree, Recent Advances in Electrical & Electronic Engineering (Formerly Recent Patents on Electrical & Electronic Engineering), Volume 16, Number 4, 2023, pp. 426-435(10), **DOI:** https://doi.org/10.2174/2352096516666221201095009
b. Recent literature needs to be added