Design of Circular Ring Shaped UWB Antenna for BANs and MI Applications

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Abstract:
In this work presents a lightweight ultra wide band (UWB) antenna with a high fidelity factor (FF) for healthcare applications. In order to obtain the greatest degree of FF in all the field, the design strategy examines the return loss, antenna gain, and group delay throughout the UWB spectrum in each design stage. The final design is an elliptic ground plane with a size of 1620 mm2 and a circular antenna having six rings in the radiating component. In terms of S11and FF, simulations are made in free space and on the body show that it performs admirably within the bandwidth of 3.1 to 10.6 GHz. The results demonstrate that the antenna is capable of identifying malignant tumours and benign tumours.

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Contents

I. Introduction

UWB is widely used in a variety of areas and applications. Healthcare imaging and monitoring is one of the applications that has gained popularity recently. MI technology and BANs have got a lot of interest in UWB healthcare applications [1]. Breast cancer affects most women around the world today. Microwaves can be used as an alternative in imaging approach for detecting cancers in their early stages. Using brief UWB electromagnetic pulses, it finds and detects notable dispersed