

# Design of MIMO Antenna for 5G Application with Defected Ground

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**Abstract:** Modern medical systems are working by the concept of monitoring human health conditions by implanting certain devices into the body. These body devices have to be compact and small in size with good efficiencies. Driven by the concept of wireless communication, many projects have been started to combine antennas and medical devices in a way that the wearer does not notice the working of the systems. The antenna designed for these purposes are called Implantable Antennas and should be compact, flexible, lightweight and strong. Implantable medical devices (IMDs) are capable of communicating with an external monitoring device wirelessly. These IMDs have a huge recognition in the field of biomedicine for obtaining real time and stored data in biomedical field. This project presents an implantable antenna design for biomedical applications. The parameters such as SAR, frequency, bandwidth is compared and analyzed. The problem is identified causing changes to the results and in order to get better results a system is proposed. The parameters are modified to obtain a change in the design. Ansys High Frequency Structure Simulator (HFSS) is the software used for designing and simulating the proposed antenna. The human safety is taken as an important parameter. To preserve patient safety, Implantable devices must be biocompatible.

**Keywords:** HFSS software, UWB, 5G MIMO antenna

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