

ABSTRACT

This research has outlined the design and analysis of a microstrip antenna that can be used to receive radio frequency (RF) signals. IoT has grown rapidly in recent years, with devices becoming smaller and batteries becoming more efficient. However, battery replacement in widespread IoT devices remains a challenge. Therefore, this research aims to develop a microstrip antenna capable of receiving radio frequency (RF) signals. The research methodology involves simulation and experimental testing of a microstrip antenna integrated with alternative charging technologies, such as a radio frequency (RF) energy collector. This research focuses on the use of a Dual-Band Microstrip Patch antenna coupled with a Split Ring Resonator (SRR), to produce dual-band characteristics in the microstrip antenna. The results of this research are expected that the proposed microstrip antenna is capable of receiving sufficient power frequencies to properly charge IoT devices at 900 MHz and 1800 MHz. The results of this study indicate that the designed microstrip antenna is capable of resonating at frequencies of 902 MHz and 1806 MHz, with return loss values of -27.52 dB and -24.24 dB based on simulation results, and -19.47 dB and -18.25 dB based on measurement results, respectively. The resulting bandwidth is 36 MHz at 900 MHz and 75 MHz at 1800 MHz. The results can be applied in various IoT applications, including environmental monitoring, energy management, and connected healthcare systems.

Keywords: (Antenna design, microstrip antenna, and IOT)