ABSTRACT

The development of Low Earth Orbit (LEO) satellite technology offers new opportunities in communication and Earth observation. As LEO satellite technology advances, there is also a need for ground stations capable of communicating with these satellites. However, ground stations that can communicate with LEO satellites are often expensive and complex. This research aims to design and develop a prototype of a ground station for LEO satellites based on Software Defined Radio (SDR) at a frequency of 437 MHz as a solution to meet the needs of the Telkom University ground station.

The existing solutions offer a more economical and flexible ground station, making it suitable for development in a higher education environment. The use of SDR enables software configuration to receive amateur radio signals. By utilizing SDR, the ground station becomes more flexible in adjusting the frequency and communication protocols necessary for communication with LEO satellites.

The testing results of this ground station design show that the prototype can receive data and track LEO satellites. From these test results, it can be concluded that the SDR-based ground station at a frequency of 437 MHz is an effective and efficient solution for communication with LEO satellites, providing a more affordable alternative compared to conventional solutions.

Keywords: LEO Satellites, Ground Station, Software Defined Radio, Frequency.