

ABSTRACT

The development of the control system is very rapid with the increasing development of electronic technology and transmission systems. Control systems are widely used in the military, telecommunications, aviation and others. One of the control systems that is currently being developed in the military world is the guided missile system, but research or developments on the domestically controlled missile system are still inadequate, so that Indonesia still buys foreign products and cannot produce it themselves. To overcome these problems, research or development of a guided missile system is carried out using an antenna as a two-way communication device between the missile and the control station.

In this study, a microstrip antenna arrangement was designed which was placed on a missile as a control signal receiver from the control station. The antenna used in this study is a microstrip antenna with a 2x2 microstrip feed array technique. The rocket developed in this research is the MK 104 rocket type which can be called the Evolved SeaSparrow Missile (ESSM). Where this rocket uses uplink data on the X-Band frequency with a frequency of 10.25 GHz.

The microstrip antenna is simulated using simulation software and the optimization results are realized in physical form. The realization process uses a roger duroid 4003 substrate material with a dielectric constant value (ϵ_r) = 3.38 and has a thickness of 0.813 mm. The 2x2 microstrip array antenna produces 11.2 dBi gain, -28.754 dB return loss, unidirectional radiation pattern and 598.49 MHz bandwidth.

Keywords: Missile, ESSM, Microstrip Antenna