ABSTRACT

A guided missile is a military rocket weapon that can be controlled or has an automatic control system to locate a target or adjust direction. This missile or missile is delivered to the target through the flight process. To get a short time to reach the target generally have a rocket-based booster. In the missile system there are 2 modes to be able to reach the target, namely ballistically (the laws of physics about falling objects) or by using aerodynamic lift. In this research, a 4 way Power divider will be designed for antenna integration to be placed on a rocket as a control signal receiver from the control station. The missile that was developed in this research is the MK104 rocket type with the designation Evolved Seasparrow Missile (ESSM).

This final project designs and realizes a 4 way power divider with a working frequency of 3.1 Ghz using the S-Band frequency. which can be used for uplink evolved seasparrow missile (ESSM) MK104 rocket applications. This power divider has 4 output ports and 1 input port. The tool is designed using CST Studio Suite 2019 whose results will be realized in physical form. The measurement results on the microstrip power divider are expected to show a wide bandwidth and can work at a frequency of 3.1 GHz with a VSWR value of 2, return loss - 10 dB, insertion loss < -6 dB and phase difference -10^{o}

The result of the measurement of the power divider is that the parameter value of S11 is -13,584 dB. The parameter value of S22 is -30,840 dB. The parameter value of S33 is -31,250 dB. The parameter value of S44 is -31,086 dB. The parameter value of S55 is -30,086 dB. The insertion loss value looks stable on each port, with the maximum value at S13 at a frequency of 3.1 Ghz, which is -7,299 dB. The value of the phase parameter results are not much different and according to the specified specifications. The measurement results are in accordance with the specifications for the uplink evolved seasparrow missile (ESSM) MK104 rocket application.

Keywords: ESSM, Power Divider, Rocket, Return Loss, Insertion Loss