

ABSTRACT

Radar is electromagnetic wave system that widely used today. The media are widely used to detect measure distances and can be used to map objects such as aircraft, motor vehicles and weather information / rain. One of type of radar that is doppler radar is S-Band radar. In the radar system, antenna array is needed in order to produce high gain and narrow beamwidth. Therefore, it take power combiner so that each antenna to obtain the same power.

A power combiner 4: 1 at a frequency of 2.9 - 3.1 GHz for S-Band radar has been designed and realized. The tool is realized by pieces trasmisi microstrip line in the form of two-level transformer $\lambda / 4$ with each of the impedance characteristics have been calculated so that it can match with 50Ω transmission line.

Power combiner measurement results obtained VSWR values at the output port maximum 1.234 at a frequency of 3 GHz, and the maximum input port 1186 to port 5 at a frequency of 2.9 GHz. Return loss is directly proportional to the value ie maximum output is -29 856 dB at a frequency of 3 GHz, and the maximum input port to port 5 -21 372 dB at a frequency of 2.9 GHz. For maximum isolation between the input ports -24.808 dB valued at 3.4 port at a frequency of 3.1 GHz. Result of insertion loss maximum -7.085 at port 3.1 dB at a frequency of 3.1 GHz. So it can be said that the power combiner can work well due to still in the design specifications.

Keywords: S-Band Radar, Power Combiner, antenna array