

## ABSTRACT

Power divider or combiner is a passive microwave components that are used to divide or combine the power, because the input ports and output ports match. In other words, the power divider serves as a reciprocal passive device, which can also be used as a power combiner. In dividing power, an input signal is divided by a power divider or combiner into two or more signals with less power.

In this final project, will be designed and realized a four output balanced power divider in the frequency range 100-500 MHz. Power divider or power divider is expected to have the same large power output at each output. In this power divider realized by Wilkinson method with a lumped element, where the lumped element method uses passive components such as inductors and capacitors, which then serves as a matching. This power divider can be applied to the GPR (Ground Penetrating Radar), who worked at a frequency of 100-500 MHz. The insertion loss to be achieved by  $< 1$  dB, isolation between the output port to be achieved  $\geq 20$  dB and the VSWR to be achieved  $\leq 1.5$ . To determine the performance of the power divider which has been realized, in this final project has also carried out measurements and testing of a power divider with predetermined specifications.

The measurement results with the material Epoxy/FR-4 power divider for insertion loss ranged from 0.0001-0.9966 dB, a maximum VSWR  $\leq 1.3$ , and found that the isolation between the output port ranges from 42-59 dB. From the measurement results of power divider that has been done, it can be concluded that this power divider has complied with the initial specifications have been determined previously.

***Keywords : power divider, insertion loss, VSWR, lumped element.***