

## ABSTRACT

Along with the development of telecommunication technology, especially radio waves, it takes a medium/device for continued propagation wave into an optimal fashion. In Addition, communication via radio waves is concentrated energy in the desired direction. To direct this energy needed an antenna. Type of antenna used depends on the form of coverage/coverage predetermined. To obtain the radiation pattern and reinforcement, usually an antenna arranged in the form of an array antenna. To distribute power to the array antenna, needed a power divider. Power divider can be as a splitter only or both combining.

Due to solving these tasks, will be designed and realized two Wilkinson 4-Way Power Divider with four power output of the same and there are different phases  $90^\circ$  between the output port is near, each impedance inputs and outputs  $50 \Omega$ . The material used in the design of power divider uses 2 types of PCB are different, where the data of measurements for each type of PCB would be material comparative with further analysis. The existence of difference of phase at the four port of output is used for beam forming. Divider this power to be applied to an array antenna that works at frequencies 2300 – 2400 MHz. The insertion loss to be achieved  $< 1$  dB, the isolation between the output port to be achieved  $\geq 20$  dB and the amount of VSWR to be achieved  $< 1.5$ . The method used in the design to divides this power is Wilkinson dividing method with channel stripline for shielded stripline types.

Measurement result for power divider with epoxy/FR-4 materials , for insertion loss occurs between 0.4 – 0.9 dB of range, maximum value for SWR is 1.1, isolation between output port is 28 – 33 dB, and phase different for adjacent output port occurs phase shifting is  $15.7^\circ$  at centre frequency. but, measurement result for power divider with Duroid/RO4003C materials , for insertion loss occurs between 0.2 – 0.6 dB of range, maximum value for SWR is 1.3, isolation between output port is 22 – 32 dB, and phase different for adjacent output port occurs phase shifting is  $10.48^\circ$  at centre frequency. From measured data result, it indicates that SWR and isolation

measurement, power divider with epoxy materials is greater than RO4003C materials. for SWR maximum occurs 1.1 and isolation occurs between 28 – 32 dB of ranges, but for insertion loss measurement, power divider with RO4003C materials is greater than epoxy material, maximum occurs 0.3 dB.

*Keywords: Wilkinson Power Dividers, Shielded Stripline*