

## ABSTRACT

Hybrid or Coupler is very important in the usage of microwave application that is useful in the electronic engineer, radar even communication system. This circuit frequently used in frequency discriminator, balanced enhancer, balanced mixer, and automatic level controller. Hybrid realized by directly connecting the circuit element with transmission canal concept which has four ports and impedance in each port.

In this final project, it has been made a hybrid or coupler  $90^\circ$  with narrowband by utilized passive components; such as inductor and capacitor. In this application, the frequency range is approximately 810 MHz – 990 MHz, with a 50 ohm coaxial terminal. Therefore, in five months, it has been designed and realized 1 hybrid  $90^\circ$  prototype model using passive components, with VSWR value  $\leq 1.1$  and  $\geq 28$  dB isolation, consider as most important to make those passive components by own self.

To get performance from coupler that has been realized, it has been done also measurements and coupler testing with a determined specification, in this application. Based on coupler measurement which has been realized, it is resulted coupler specification close to initial specification.

In the realization, it gained 810 MHz – 990 MHz frequency range in VSWR  $\leq 1,3$  limitation, the isolation is in mutual accord to 28 dB, the coupling value is about 2-4 dB and the impedance is close to 60 ohm.

Keywords: hybrid  $90^\circ$ , coupler, passive component