Abstract

WCDMA (Wideband CDMA) is an alternative 3G mobile of communications network system with a variety of broadband high-speed data. At the transmitter communication system including a WCDMA system contained an amplifier device (to strengthen the signal) and Mixer (to increase the frequency of the base band to IF or RF). Amplifiers and mixers require devices that can support data transmission with high speed and wide bandwidth. For it has made manifold Lange coupler Directional Coupler is easily gain by 3 dB coupling ratio with wide bandwidth.

In this final project has been realized Lange directional coupler using microstrip technology with their input impedance and output impedance 50Ω. Lange Coupler is a device devices are passive 4-port consisting of narrow lines coupled to divide the power transmission into several sections or more where the two outputs have the same amplitude but different phase 90 ˚. Materials used in this coupler is 3.2 mm FR4 Epoxy. Lange coupler is often used for microwave amplifier sections of the ribbon width and very wide balance (balanced). Coupler works at 1800-1900 MHz frequency that can be applied to CDMA systems, GSM, and others. To be achieved insertion loss <1.2 dB. Isolation between input ports is ≥ 18 dB, VSWR large to be achieved ≤ 1.5 and the coupling factor to be achieved by 3 dB + / - 2dB.

Coupler was tested by using Network Analyzer. The measurement results for the coupler insertion loss ranged from -3.496 to -3.863 dB dB, the coupling factor measurement ranged from -3.634 to -4.595 dB dB, maximum VSWR is 1.345, impedance of each port range between 48 293 Ω - 63 105 Ω, the isolation between the output ports range from 24dB - 29 dB, isolation between input ports and the isolation ranged between 22 dB, the phase difference between adjacent output ports phase shift occurs around 90.25 ˚ - ˚ 103.31.

Keywords *:Hybrid Coupler*, *Lange Directional Coupler*, Microstrip