

ABSTRACT

Circulator is a kind of component or a passive device of microwave which has a lot of terminal and generally established of three matched terminal. The characteristic of circulator is a guide for electromagnetic wave from certain terminal to the other one chronologically. The designed circulator in this project is a kind of circulator that made a variable of changing current creating magnetic field and forming cyclic circulation. This circulator uses two ferrites squeezing the strip line to three terminals. The material these ferrites made of are form clay and ferromagnetic sand with certain composition. In order to make electromagnetic field in the circulator work properly, the role of ferromagnetic in those ferrites needed absolutely.

In this final project, the variable circulator has been applied with specification of VSWR = 1.5, frequency range of 1500 MHz – 2500 MHz and the expected impedance to three lines close to 50 Ω , the expected isolation = 30 dB, then the insertion loss = 0.2. In order that this circulator device is able to be used in communication system, thus the reflection coefficient found in generator has to be small.

According to the measurement result, the designed circulator parameter specification is near to the former one. The realization of the variable circulator is VSWR = 1.5 changing current at 5mA in frequency 1829,11- 2422,05 MHz, 10mA in frequency 1858,11 - 2418,05MHz, and 50mA in frequency 2144,08 - 2433,05MHz. Ideal impedance conditon are got at 50,03+j6,01 Ω with isolation range 28 – 29 dB, and insertion loss of 0.17 dB.