

ABSTRAC

Circulator is one of passive microwave device that have three or more ports, and the functions of each port are different. The characteristic of circulator is non-reciprocal, it means the direction of input wave not be used for direction of output wave, or backside. One of the functions of the circulator is blocking the reflection wave, that caused by unmatched between characteristic impedance and load impedance. The unblock of reflection wave is caused broken of signal generator; therefore circulator can used for blocking the reflection wave.

At this final project, a Y circulator is realized and that can block the reflection wave. Circulator that realized is make by sterofom and ferit that mixed by water, gips stone and iron powder. Specification that wanted from this circulator are characteristic impedance is 50Ω , $VSWR \leq 1.5$, insertion loss $-3dB$ that can use at frequency $800MHz-1100MHz$.

Circulator was tested by Network Analyzer. Results of the measurement are insertion loss port 1 and 2 between $-3.5 dB$ to $-6 dB$, insertion loss port 3 between $-3.5 dB$ to $-5.5 dB$. Return loss port 1 and 2 between $-6 dB$ to $-14 dB$, return loss port 3 between $-7 dB$ to $-14 dB$. VSWR that approach to 1.5 at frequency $1080MHz$ are 1.525 (port 1); 1.4965 (port 2); and 1.52 (port 3). Impedance that approach to design at frequency $1080MHz$ are 70.605Ω (port 1); 68.1Ω (port 2); and 70.87Ω (port 3)

Keywords : Y Circulator, Ferit and Frequency.