

ABSTRACT

A duplexer is a device that isolate receiver from transmitter when use same antenna. An ideal duplexer produces the perfect isolation without insertion loss from and to the antenna. Synthetic Aperture Radar (SAR) -which is one of the earth's surface profile imaging technology from space to get an overall earth's profile-, is a technology that uses one antenna and one frequency for receiver and transmitter. Because of the power from transmitter is high, so that in this final task is realized a ferrite circulator type duplexer, which aims to reduce reflected signal to input, that can be caused damage to that component.

A realized ferrite circulator type duplexer Y-shaped made of copper as a channel strip, polifoam as the dielectric material, and ferrite made of a mixture of iron sand, white cement, and water. The desired specifications of a realized ferrite circulator produces $VSWR \leq 1,5$ at frequency 1265 MHz – 1275 MHz, insertion loss ≤ -3 dB, with the characteristic impedance 50Ω .

The measurement results show the value of insertion loss on port 1 (S_{21}) is -10,483 dB, on port 2 (S_{22}) is -12,535 dB, on port 3 (S_{33}) is -10,933 dB, the value of return loss on port 1 (S_{11}) is -16,045 dB, on port 2 (S_{22}) is -10,898 dB, on port 3 (S_{33}) is -9,7252 dB, while the value of VSWR on port 1 is 1,3156, on port 2 is 1,6869, and on port 3 is 1,9543.

Keywords: Synthetic Aperture Radar, duplexer, ferrite circulator