

ABSTRACT

Transportation is a means that is needed by the community. The train is a mode of transportation that is popular with the public because of its fast travel time compared to other modes of land transportation. Of course, each carriage has a role in securing train travel. This signal serves as communication between each carriage. To facilitate communication between each car, it is necessary to have a radio wave antenna that propagates through space and an electric current that travels in a metal conductor, and is used with a transmitter or receiver. Yagi antenna is a directional antenna that is directly radiating and is designed to emit waves at only one frequency. This antenna consists of driven, reflector and director known as elements. Therefore, a planar conductor based sectoral yagi antenna will be designed at a frequency of 2.4 GHz for communication between train cars. The antenna will be installed on the outer wall of the train in each car.

This final project aims to maintain a smooth and safe flow of information on trains. The antenna receives and sends communication signals between carriages including voice, data and other information. This antenna design will be made with specifications of $VSWR \leq 2$, return loss ≤ -10 dB, and gain ≥ 2 dBi.

The results of sectoral yagi antenna measurements based on planar conductors with the desired parameters, such as a VSWR value of 1.116 and a return loss of -25.203 dB. If integrated with an iron plate, the return loss value is -24.788 dB and VSWR is 1.122.

Keywords: antenna, train, communication, return loss, VSWR, gain.