

ABSTRACT

Citarum river BTS monitoring devices require a transmission system that can transmit data in real time. Therefore, an antenna system is needed that is able to accommodate these requirements. To improve the performance of the antenna, one of them is by using the MIMO technique. The MIMO technique uses more than one antenna both on the transmitter side and on the receiver side. Microstrip antennas have several advantages, including having a relatively low price for fabrication costs, relatively small in size, and almost able to work at all working frequencies because they have flexible frequencies. In this Final Project, a 2X2 MIMO microstrip antenna will be designed with 2 array elements each at a frequency of 5725-5875 MHz. It is very important for a BTS transmitting antenna on the Citarum river to have sufficient gain and bandwidth, because this will be a benchmark for how well the performance of this antenna emits signals to the river monitoring device. These antennas have a unidirectional radiation pattern. This study aims to find the best performance for the antenna to be used on the Citarum River monitoring BTS. In this study, the best design is a 2x2 MIMO Antenna with 2 rectangular patch array elements with an antenna orientation of 90° (Position 2) which has a VSWR value of 1.0858, has a bandwidth of 310 MHz working in the frequency range of 5,669-5,979 GHz, has a gain of 5,931 dBi, has a unidirectional radiation pattern, and has an elliptical polarization.

Key Word; MIMO, BTS, *Gain, Bandwidth*