

ABSTRACT

Natural disasters are natural events that can cause harm to humans. Natural disasters are also a thing that often happens in Indonesia. The types of natural disasters that often occur in Indonesia are landslides, floods, volcanic eruptions, tsunamis, forest fires, and others. One of the impacts that can result from natural disasters is a large number of casualties when natural disasters occur.

One of the natural disasters that caused the impact of many casualties was a landslide. To deal with these impacts, an early detection system is needed before a landslide happens. One system that can detect landslides is radar. Radar is a system that can detect targets and provide information about the weather using electromagnetic waves. The radar that will be designed, simulated and analyzed observes land movements that happen on the slope. In this final project will be discussed one component that is very crucial on the radar, the antenna. To detect landslides, a remote detection system is needed which can cover a wide scope with an antenna that produces a large enough gain value. The antenna that used to detect landslides is the waveguide slot antenna. The waveguide slot antenna can be used as a radar to detect landslides by detecting land movement on the slope and can produce a large enough gain value.

The working frequency used in this waveguide slot antenna is the X-Band frequency at 9.4 GHz. The specifications produced from this test are waveguide slot antenna using 8 slots, having a VSWR value is 1.1333, S11 value is -24.0874 dB, gain value 9.7124 dB, having a bandwidth value of 152.5 MHz, having an omnidirectional radiation pattern and having linear polarization.

Keywords: Radar, Waveguide Slot Antenna, X-Band, Landslide