ABSTRACT

The ultra wideband (UWB) technology can support high data transmission speed, low power consumption, and simple configuration of hardware for applications such as RFID devices, network sensors, location tracking systems, and radar and remote sensing. UWB has a narrow pulse characteristic that will support for high resolution, therefore, applications related to radar and remote sensing are among the best UWB technology utilization.

In this final project designed the Ultra Wide-band microstrip antenna, because it has potential to be applied to Synthetic Aperture Radar (SAR). One of the wide bandwidth advantages of SAR is that it provides high resolution. In addition, using a basic microstrip antenna will make the SAR payload much lighter.

The design of the antenna is done by simulation using software and realized with Roger Duroid RT 5880 dielectric substrate with dielectric constant εr = 2,2 and thickness h = 1,575 mm. The antenna simulation results work at a frequency of 9.6 GHz (X-Band) with a bandwidth of 2.6436 GHz so that this antenna can be categorized as an ultra wide-band. In addition, antenna polarization is linear which acts on both horizontal and vertical polarization. Thus, it is expected that the antenna designed in this study will improve the quality in weather monitoring. At the realized antenna the generated bandwidth is 0.831 GHz at a frequency of 9.6 GHz, but the realized antenna produces a dual-band with a second resonance frequency at 12.15 GHz.

Keywords: Microstrip antenna, X-band SAR, Ultra Wide-band