

ABSTRACT

In a long distance communication network system, antenna has a very important part. As the development of antenna technology that used to have large dimensions, now antennas can be found with small dimensions. The development of antennas using textile materials is currently very popular because the antenna has a lightweight and flexible form. Currently the telecommunications market needs lead to the distribution of information in large capacities, so we need a communication device that can work with wide bandwidth or wideband.

Therefore, we need a textile antenna that can be a part of clothing that is used for communication purposes such as tracking or navigation. So when the antenna has been bent due to body shape, the user still feels comfortable because the antenna material is made of fabric. Wideband textile antennas in this final project are designed using the Defected Ground Structure (DGS) technique to achieve the desired bandwidth. With antenna performance that is safe when attached to parts of the human body.

In this final project a textile antenna is designed with a rectangular microstrip design microstrip line feed rationing technique that uses a substrate with full cordura fabric, then on the patch and groundplane using aluminum foil tape. The frequency of work in this Final Project is in the range 900 -1800 MHz. The characteristics of this study are $VSWR \leq 2$, return loss ≤ -10 dB, bandwidth ≥ 900 MHz, gain value ≥ 3 dBi and SAR value ≤ 1.6 W / kg. The antenna dimensions are obtained through theoretical calculations which are then simulated using CST software studio microwave.

Keywords: *Textile Antenna, Microstrip Antenna, Aluminium foil tape*