

ABSTRACT

Initially, GPS technology was used for military navigation systems. While then, the utilization of GPS for civilians was still limited. Nowadays, GPS technology can be used by all civilians who have smart devices that connected to the internet. One component of the GPS application is the antenna. One type of antenna that can be used for GPS is a printed antenna, due to its flexibility and mobility. GPS usage service is free, it only requires a GPS receiver to get the position, speed and time coordinate information.

Antenna is an object designed to send and receive signals. One type of antenna that can be used for wearable antennas is a printed antenna. Printed antenna is a type of antenna that has a ground plane, substrate and patch. Currently, many printed antennas are developed that are expected to facilitate communication with more flexible forms. Some substrates material on antennas is highly affecting the antenna parameters. With various types of substrates used, substrate comparisons can be done to get the best results.

Through this final project, characterization of several flexible materials i.e. Roger 5880 and Roger 3003 compared to FR4, a commonly used material is carried out. This study uses a patch printed yagi antenna that works at the frequency of 1575.42 MHz for the Global Positioning System (GPS) L1 application. The antenna with RO5880 substrate simulation results indicates that the antenna is working at the frequency of 1.575 GHz with 195.3 MHz bandwidth, 1.008 of VSWR, 5.87 dB of gain, 6.73 dBi of directivity and 82.1% of antenna efficiency. As for the antenna with RO3003 substrate simulation results indicates that the antenna works at the frequency of 1.575 GHz with 182.7 MHz of bandwidth, 1.009 of VSWR, 6.57 dB of gain, 6.87 dBi directivity and 93.5% of antenna efficiency.

Keywords: Global Positioning System, Printed Yagi, Printed Antenna.