

## ABSTRACT

Telecommunications technology is currently growing rapidly and progressively, but without us realize that from this technology some things can be fully utilized again. In this case, what is meant is Radio Frequency waves. Radio Frequency can be used as an alternative energy source because it can produce low power electricity. So it can be used by electronic devices that have low power.

RF (Radio Frequency) energy harvesting is a process whereby radio frequency energy emitted by a source produces high electromagnetic fields such as TV signals, wireless radio networks, and cellphone towers, but through a power plant the circuit is connected to the receiving antenna, captured and converted to DC voltage by rectifier device that can be used for low-power electronic devices.

This final project will design and objectify a dipole antenna that uses patches made from aluminum foil tape and different types of substrates. Aluminum used has different widths, namely 1 cm, 2.5 cm, and 5 cm and the substrate used is 3 types, namely acrylic, styrofoam, and jeans. The 9 fabricated antennas are used to determine the effect of aluminum and substrate on the antenna's performance. Through this final project, the worst antenna performance value is obtained, namely the antenna dipole with an aluminum patch which has a width of 5 cm. This is because of the influence of capacitance on the gap which causes the antenna's performance value to be bad. However, the dipole antenna with an aluminum patch which has a width of 1 cm and 2.5 cm can operate well at a frequency of 600 MHz. With VSWR value of styrofoam, acrylic, and jeans substrate antenna for 1 cm aluminum foil tape, respectively 1.12, 1.27, and 1.27. VSWR of styrofoam, acrylic, and jeans substrate antenna for 2.5 cm aluminum foil tape, respectively 1.28, 1.28, and 1.33

**Keywords:** RF Energy Harvesting, Dipole Antenna, Aluminum Foil Tape