

ABSTRACT

Wi-Fi is a technology that utilizes electronic equipment for exchange data wireless (using radio waves). Wi-Fi is has been implemented in many places such as lecture buildings, offices, cafes, and houses. Wi-Fi wave is an electromagnetic wave. Its energy is can be used as a source of electricity because it is easy to find Wi-Fi sources in various places.

Therefore, to utilize electromagnetic waves at Wi-Fi frequencies an antenna needed to capture electromagnetic energy, then convert that energy into electrical energy and then stored in batteries or directly used energy to devices that require little energy. One antenna that is can be used to capture electromagnetic wave energy is a textile antenna.

In this Final Project, a textile antenna designed and realized using rectangular patches made of aluminum foil tape and using cordura and polyester fabrics as substrates. Through this research, the antenna can operate at a frequency of 2.4 GHz and the antenna characteristic values obtained with the cordura substrate in normal conditions, namely VSWR is of about 1.1619, return loss is of about -22.508 dB, the gain value is of about 6.626 dBi. When the On-Body condition is obtained VSWR is of about 1.3904, return loss is of about -15.738 dB, gain is of about 0.366 dBi, SAR value is 0.769 W/kg with unidirectional radiation pattern. Antenna with polyester substrates under normal conditions obtains a VSWR of 1.2048, return loss is of about -20.639 dB, a gain of 4.006 dBi. When the On-Body condition obtained, VSWR is of about 1.6328, return loss is of about -12.382, the gain is of about 0.596 dBi, SAR value is 0.499 W/kg with unidirectional radiation pattern.

Keyword : Textile Antenna, energy harvester, Wi-Fi, SAR