

ABSTRACT

Radio Frequency Identification (RFID) has grown rapidly since it was introduced in World War II. At present the use of RFID is very diverse in industry, markets and social life such as lecture attendance. RFID works in several frequency bands, one of which is on UHF (920-923 MHz). RFID communication uses antennas that can work in one of these frequency bands. One category of antennas that can be used by RFID is wearable antennas because of the antenna's flexibility and mobility.

Wearable antennas are antennas that can be designed and become part of clothing that functions for communication purposes. Some materials that have been investigated as wearable antennas are copper tape and conductor thread. Antennas made from these materials have been made in the form of logos. From these studies, it is possible to make wearable antennas made of copper tape and yarn conductors in the form of the Telkom University logo with UHF working frequency as RFID tags.

In this Final Project, a wearable antenna with a patch in the form of Telkom University Logo for UHF-RFID has been designed and simulated. Antennas with Telkom University logo patches that use polyester substrates have a VSWR of 1.12, bandwidth of 26.08 MHz, gain of 4.074 dBi and SAR of 0.52 W / kg using copper tape as patch material. If using a yarn conductor as a patch material, a VSWR of 1.14 is generated, a bandwidth of 26.08 MHz and a gain of 5.935 dBi with SAR of 0.42 W / kg. Antennas with Telkom University logo patches that use cotton substrates have a VSWR of 1.48, a bandwidth of 19.207 GHz, a gain of 3.01 dBi and a SAR of 0.22 W / kg using copper tape as patch material. If using a yarn conductor as a patch material, a VSWR of 1.11 is generated, a bandwidth of 19.183 GHz and a gain of 3.197 dBi, where the SAR value is 0.81 W / kg.

Keywords: RFID, wearable antenna, yarn conductor, copper tape, substrate.