

ABSTRACT

Wireless communication technology is an important part in the development of the 4th generation communication system. One that has experienced very rapid development in this technology is the antenna. An antenna is a device that deals directly with the transmission media and this is very useful for wireless communication. One of the antennas currently being developed is microstrip antenna made from textiles. Microstrip antenna textile material is a type of wearable antenna based on fabric or textile, the use of textile materials is very good to be applied because it is lightweight, soft and flexible.

In this final project, research has been carried out on the design and simulation of a rectangular patch microstrip antenna that works in the 5-6 GHz frequency range for wearable antennas, on the substrate using 3 layers of jeans textile with a substrate value of 1.7, 1 mm thickness, and the loss tangent value is 0.025. As for patches and ground planes using copper tape. The rationing technique used is microstrip line to simplify the manufacturing process.

From the simulation results on body obtained width of 320.6 MHz bandwidth from the frequency range of 5695.4 MHz - 6016 MHz with VSWR value ≤ 1.6 . The antenna gain is 7.2 dB with a SAR value of 1.115 at a distance of 2mm from the body. While the measurement results when the normal condition of the antenna produces a width of 152.5 MHz bandwidth with VSWR ≤ 1.6 and a gain of 3.5 dB. For radiation patterns the results of simulation and measurement when ordinary conditions and on body produce unidirectional.

Keywords: Textile material, dielectric permittivity, Microstrip patch method