

ABSTRACT

PCB dipole antenna is one type of printed antenna that has omnidirectional radiation pattern. With omnidirectional antennas, the signal can be emitted in all directions and applications required of such an antenna, can be used on the Access Point (AP) for data communications in Wireless-LAN network. In order for the PCB dipole antenna can be used on the Access Point (AP), then the antenna should have a VSWR <1.5 in the frequency range (2400-2483.5) MHz.

At the end of this task is realized and analyzed PCB dipole antenna for WLAN frequency band (2400-2483.5) MHz. The antenna was simulated using Ansoft HFSS software, and two different cases (with balun, and without balun) and realized with two different substrates for comparison. Comparisons are made is a comparison of PCB dipole antenna with balun similar cases and with different substrates, and Comparison with the same substrate and different balun case.

Based on the results of measurements, for a dipole antenna PCB using FR4 substrate with a balun at a frequency of 2460.5 MHz, the antenna has a VSWR value of 1.015 with a bandwidth of 250 MHz for $VSWR \leq 1.5$ and 1.792 Gain dBi omnidirectional radiation pattern. PCB dipole antenna without a balun using FR4 substrate at a frequency of 2432.6 MHz, the antenna has a VSWR value of 1.211 with a bandwidth of 144 MHz for $VSWR \leq 1.5$ and 1.726 Gain dBi omnidirectional radiation pattern. While the PCB using a dipole antenna with balun RF35 substrate at a frequency of 2441.9 MHz, the antenna has a VSWR value of 1.015 with a bandwidth of 165 MHz for $VSWR \leq 1.5$ and 2.143 Gain dBi omnidirectional radiation pattern. PCB dipole antenna balun using RF35tanpa substrate at a frequency of 2420.9 MHz, the antenna has a VSWR value of 1.404 with 72 MHz bandwidth for $VSWR \leq 1.5$ and 1.964 Gain dBi omnidirectional radiation pattern. Based on the above measurement data, the antenna can be used as an Access Point (AP) in WLAN.

Key words: dipole antennas, microstrip antennas, WLAN