

ABSTRACT

Microstrip antennas are antennas that can be used for short range communication systems, radar technology and spectrum sensing. Spectrum sensing is a technology that requires an antenna that has a wide bandwidth in the use of frequency spectrum. To support this technology, additional techniques are needed that can widen the bandwidth of the microstrip antenna. The matching impedance of a binomial multisection transformer is matching the air impedance to the load impedance, which can broaden the bandwidth.

In this study, the antenna analyzed is a microstrip antenna with a multilevel feed line, which uses a square patch with proximity coupled rationing. The material used as a substrate is Duroid 5880 with a relative permittivity of 2.2, and a substrate thickness of 1.57 mm. The feed line used in this study is in the form of one to five sections to match the 50 ohm connector load with an air impedance of 377 ohms with a binomial multisection transformer.

The results of this study found that the antenna with feed section 1 section, has a bandwidth of 1.3280 GHz at a frequency of 5.5 GHz. The antenna with feed line 2 section shifts to high frequency, which is at 7.5 GHz frequency and has a bandwidth of 0.4821 GHz. Antennas with 3 section feed line have a bandwidth of 0.832 GHz which is at a frequency of 5.7 GHz. Antennas with 4 section feed lines have a bandwidth of 0.3816 GHz and shift to high frequency at 8.7 GHz. Antennas with 5 section feed lines have a bandwidth of 0.7972 GHz, which is at a frequency of 5.6 GHz. Adding a section to the antenna with a stratified feed line can have a wide bandwidth. On the feed line 5 section antenna which is realized and carried out the measurement results in a bandwidth of 0.934 GHz at a frequency of 5.59 GHz.

Keywords: Binomial Multisection Transformer, Microstrip Antenna, (Ultra-Wideband) UWB.