

ABSTRACT

Digital television broadcasting is a type of TV broadcast with digital modulation techniques and compression systems to broadcast video, audio, and data signals to television sets. The development of digital television is transition of technology from analog to digital systems. The benefits of digital TV broadcasting result in sharper and better reception of images and sounds. Stopping analog broadcasts provides a saving effect on the use of the radio frequency spectrum. Digital TV broadcasts require devices that support more efficient use in the room.

This final project is designing and realizing microstrip antenna with miniaturizing fractals Koch in order the antenna dimensions are smaller and the bandwidth is larger according to specifications. Miniaturization of microstrip antenna in the form of iteration-1 fractal on patch and iteration-2 slot technique in ground plane for digital television that can work according to Indonesian digital television frequency allocation, which is 478 - 694 MHz. The rooting used was a microstrip proximity coupled feed using Epoxy and copper FR-4 substrate as a ground plane and patch. The antenna was designed and simulation in antenna designer's software application to obtain work frequency values, return loss, radiation patterns, and polarization. Realization of the results of antenna testing carried out measurements on the outer and inner parameters using Network Analyzer (NA) as a comparison. In the final stage, the antenna is applied to digital television.

Based on the results of the simulation and analysis shows that the antenna in this study works at a frequency of 586 MHz with a bandwidth of 245.99 MHz, which is in the frequency range 477.81 - 723.8 MHz. With a return loss value of -16.67 dB at frequency 586 MHz and a gain of 3.085 dB. The radiation pattern of the antenna produced is bidirectional, while the polarization is linear. The realization of the antenna has a dimension of 17.33 cm × 17.33 cm.

Keywords: *TV digital, microstrip, Fractal*