

ABSTRACT

5G network technology is a development of 4G network technology with the advantage of data transfer speeds that are multiplied from 4G networks which are very functional to meet the needs of better network services. To meet the needs of 5G network technology, a wide spectrum is needed. Antenna is one of the components that will affect the implementation of 5G network technology. In the Final Project research is to design a microstrip antenna using a Complementary Split Ring Resonator (CSRR) on the ground plane side in 5G technology.

In this Final Project, design and realize and analyze the circular ring patch microstrip antenna using CSRR at a frequency of 3.5 GHz. CSRR is used on the ground plane and a CSRR unit cell is added. The function of CSRR is to increase bandwidth or gain in microstrip antennas, microstrip antennas which have shortcomings in narrow bandwidth and small gain.

Based on the realization results, it shows that the metamaterial structure, namely CSRR, is very influential in increasing wide bandwidth. The bandwidth of the circular ring patch microstrip antenna in the simulation is 140 MHz, while the microstrip antenna with CSRR has a bandwidth of 995 MHz in the simulation and the measurement has a bandwidth of 880 MHz for the circular ring patch microstrip antenna with CSRR 1x2. Return loss of 17.218 dB, VSWR 1.328, with a gain value of 1.7 dBi. In this Final Project, the microstrip patch circular ring antenna with CSRR has met the specifications and works at a frequency of 3.5 GHz in 5G technology.

Keywords: *5G, Microstrip Antenna, Microstrip Antenna Parameters, circular ring patch, CSRR*