

ABSTRACT

Currently, although 5G technology has been implemented in several regions in Indonesia, there are still many cities in Indonesia that have not gained access to the technology. This research will create an antenna that supports 5G technology using a frequency of 26 GHz. In 5G communication itself has three types of frequencies that will be applied in Indonesia, namely: Low Frequency, Middle Frequency, and High Frequency. The selection of frequency 26 is using frequency with high frequency type, for now in Indonesia itself is still implementing low and middle frequencies, then to support the development of 5G in Indonesia, especially this study uses high frequency with a frequency value of 26 GHz. The antenna that is designed using the CST Microwave 2019 software is a type of microstrip antenna with a square patch or patch in a square shape with a frequency of 26 GHz. This antenna will be arranged in 2 stacking elements or MIMO 2x2 with the addition of U-slots on the antenna and by using the method of deformed Ground Structure (DGS). From the results of this study the antenna has a final dimension of 33.77 mm x 7.63 mm. Simulation results show that the frequency of 26 GHz has a return loss at S_{11} -11.079 dB, VSWR 1.775, bandwidth 0.125 GHz, and gain 5.725 dBi. Produces a correlation coefficient of 0.070377, mutual coupling of -50.477 dB, and has a unidirectional radiation pattern.

Keywords: Antena patch square, DGS, MIMO, U-Slot, 5G