

ABSTRACT

Telecommunications needs is a very important at this time. The need for telecommunication services is also increasing from time to time. Development of telecommunication services now demanded that telecommunications has a high-speed data transmission. LTE is a telecommunication technology with high data transmission speeds that are being developed at this time. One of the devices needed in these technologies is the antenna. Antenna that can support these technologies also developed a microstrip antenna MIMO (Multiple Input Multiple Output).

This is the final project design and realization of the Sierpinski fractal-shaped microstrip antenna gasket on LTE working frequency range, ie 2.6 GHz - 2.7 GHz. Design and optimization of microstrip antenna feedline conducted on the simulator CST 2010 to produce the desired antenna specifications. After getting the desired specifications of the antenna on the simulator and then printed antennas / antenna measurements realized and carried out by using measuring devices, such as network analyzer, spectrum analyzer, sweep oscillator and others. To obtain the value of VSWR, bandwidth, impedance, the parameter s , the radiation pattern, gain, polarization, and others. Then performed a comparative analysis between measurement results with CST 2010 and direct measurement.

The final results obtained in this final project is a $VSWR \leq 2$ bandwidth values obtained in the realization of wider bandwidth than that obtained from the CST 2010, the parameter $s \leq 20\text{dB}$, the radiation pattern is unidireksional, the correlation factor close to zero values, diversity gain ≥ 9 , polarization is elliptical. From the results obtained are designed and realized antenna has a bandwidth ≤ 100 MHz band width corresponding to the LTE technology, but the antenna can still be used for LTE technology.

Key words: microstrip antenna, fractal, sierpinski gasket, MIMO and LTE.