

## ***ABSTRACT***

Measurement of the dielectric properties of a material is required to obtain the basic data of the dielectric properties of the material. Data from these measurements can be utilized as reference data for the application of further dielectric properties such as data or values of channel impedance, reflection and distortion. So the material can be further investigated and can be determined if the material is better used as an antenna, reflector, or adsorber, or how the material can react in certain circumstances.

In addition, we will be able to find out permittivity values that exist in a material. Therefore, this study performs permittivity measurements using microstrip-based transmission line method, with the help of obstacle that must be placed at different positions above the microstrip channel for measurement. This method alone can minimize the effects of non reproducibility connectors and impedance mismatch problems commonly emerging in transmission line methods.

Measurements made using this method use a frequency of 2,45 GHz where the frequency is the frequency of health standards licensed by Industrial, Scientific, and Medical, which uses the CST application as a measurement simulator. The result of direct measurement and measurement result using CST simulator it was found that the permittivity value of Fr-4 dielectric material was 5,764 for simulation, 5,814 for VNA measurement, Aramid was 3,442 for simulation, 3,353 for VNA measurement, Cotton was 2,892 for simulation, 2,822 for VNA and Polyester measurement was 2,39 for simulation, 2,39 for direct measurement.

**Keyword :** Permittivity,microstrip transmission line, CST