

## ABSTRACT

*Cracks on building walls greatly affect the durability of building walls which can cause problems for building users. This incident occurred because of factors from the environment, the quality of the material, and structural influences. Cracks on the wall occur due to instability in the structure in holding the load caused by certain movements. By using FMCW radar as a wall crack detector, a crack category classification process is carried out.*

*In this study, the system works by classifying the wall density based on the data used from the results of crack detection on the wall based on digital signal processing using FMCW radar that is SiversIMA RS3400X 10 GHz radar. This classification is carried out in various positions between the system and the wall.*

*This research resulted in an accuracy rate of 75% with the results of system testing of the classification of reference data density and test data. Magnitude data values are obtained by detecting cracks in the wall using SiversIMA RS3400X FMCW radar in an upright position, 45 degrees to the left, and 45 degrees to the right. The analysis is carried out with a predetermined process that produces the final result in the form of a Surface Plot that functions for the classification of cracks in the wall.*

**Keywords :** *cracks, walls, density level, FMCW, classification, Surface Plot*