ABSTRACT

System on a Chip (SoC) is an embedded system module Has a certain functionality in a silicon chip board that can also be called With Veri Large Scale Integration (VLSI). The owner of the SoC design has Copyright over the system design that has been created. Fabless manufacturing is How to mold a hardware module that is designer Integrated Circuit (IC) Is Outsourching from outside the printing factory.

Fabless manufacturing from IC design has gap design theft When the design will be printed or when the project requires mutiple module With various functions from various designers. Therefore every module is VLSI From this chip designer requires proof of ownership from the designer or Production company. In this study writer make a verification of ownership design with 2 dedicated verification keys ie Polygate as the primary key going Activate the second key, and the second key will be active which process Using a digital filter algorithm.

Security uses the Obfuscation algorithm to protect the main circuit. The main circuit is inserted with a protective circuit without altering and disrupting the main function of the circuit. The Obfuscation technique is performed on the behavioral level and synthesis level. In the compilation of synthesis design (RTL) obtained main circuit and protector mixed into one. So in the final design as there, it look like is no other circuit other than the main circuit. And if the circuit is successfully cloned then the circuit can be claimed by using a special tool to activate the protective circuit. From the experiment showing of successfully of combined technique of ALU and protector circuit and able to insert 12bit signature. But there ara power increas of 2%, maksimum speed loss of 33% and layout overhead of 0.03% because circuit are combined.

Keywords: VLSI, Intellectual Property Protection, Digital Signal Processing, Polygate Watermark.