ABSTRACT

Indonesia as an archipelago country consisting of a series of islands surrounded by ocean, requires a surveillance and security systems that keep an eye on the territorial waters of Indonesia a whole. Radar as an extension of the eye to monitor the situations and conditions in the field is very beneficial in fullfilling the functions of supervision and security of the territorial waters of Indonesia.

In this thesis are discussed thoroughly on the design, simulation, and realization of a microstrip patch arrays radar transmitter antenna arranged circular patch in 24 patches, which works at a frequency of 9.4 GHz. Antenna dimensions obtained through theoretical calculations then simulated using Ansoft HFSS 10 software. The best simulation's results then done by the process of realization. Antenna optimization process carried out if the measurement results obtained are not in accordance with the specified criteria. This antenna is designed to get the comparison, as the development of radar antenna systems are being developed by LIPI.

In this thesis realized a microstrip patch arrays antenna radar transmitter with a circular patch elements, with frequency band 9,4 GHz as the applications supporting coastal surveillance radar with the results of VSWR $\leq$ 1.157 with a width of bandwidth 60 MHz, and antenna gain of 5 dBi.

Key words: Array Microstrip Antenna, Coastal Surveillance Radar, Bandwidth,VSWR