

ABSTRACT

Satellite technology is a technology with a very broad field of development. One type of satellite technology is nano satellites, with a mass of 1-10 kg. There are various types of nano satellites, such as Cubesat which has a size of 10x10x10 cm orbiting in LEO (Low Earth Orbit) at an altitude of 400-1000 km. Cubesat is perfect for university projects because of its simple mission and low cost.

Satellite communication system is a technology that uses artificial satellites to send and receive signals between different points. Satellite communication systems can provide a variety of services such as data, navigation, and remote sensing. Satellite communication systems can be classified based on their orbit. Each has advantages and disadvantages in terms of coverage, latency, capacity, cost and complexity.

Nanosatellite development in Indonesia is a new and growing field with the aim of using small, low-cost and high-performance satellites for various applications. The use of Commercial Off-The Shelf Radio Module (COTS) for cube satellites in Indonesia is a promising approach to reduce the cost and complexity of designed satellites. With the use of COTS radio modules, it is expected that the development of cube satellites can be carried out more efficiently and produce a communication module with good performance.

In this final project, the author uses two different COTS radio modules, RFM69HW and RF4463PRO, to design a nano satellite communication module operating at 437 MHz (UHF) frequency. This cube satellite communication system is powered by an STM32F103 microcontroller and integrated on a PC-104 board. This final project research consists of several steps, namely determining components, design and fabrication processes, integration, and testing.

Keywords: *Nano Satellite, Satellite Communication System, Communication Module, COTS, UHF Frequency.*