ABSTRACT

Indonesia is the largest archipelagic country in the world which allocates around 64% or 120.5 million hectares of its land area as Forest Areas, while the rest is Areas for Other Uses (APL). At present, forest fires in Indonesia still occur frequently, whether they occur due to prolonged drought or also cases of illegal forest fires. This causes huge losses for the country and the surrounding community. Cases of forest fires often cannot be detected causing large fires. In this Capstone Design Final Project, the design of a Forest Fire Monitoring System Using VHF Array Antenna is carried out as a solution to address the problem of forest fires in Indonesia which still frequently occur.

The Ministry of Environment and Forestry recorded that the area of forest fires in Indonesia was 358,867 hectares in 2021. This number has increased compared to 2020. The most severe forest fires that occurred in Indonesia in 2019 were during 2018-2021. In 2019 the area of forest fires was 1,649,258 hectares.

The results of the system research show that the sender successfully sends a signal to the receiver or can be connected to each other. In testing the receiver segment in the TULT Building, Telkom University and the transmitter segment of the Telkom University Deli Building can be connected to each other with a distance of 739 meters. Meanwhile, when testing the transmitter segment in the tree area, precisely in the Damar Building, Telkom University, it is connected to a distance of 457 meters with the receiver segment in the Putra Dormitory Building 4, Telkom University. Testing without LNA was also carried out to compare with the system with LNA. Testing without LNA is only as far as 338 meters with the position of the receiver segment in the TULT Building of Telkom University and the position of the transmitter segment in the Putra Dormitory 4 of Telkom University. There is a delay when testing is carried out which is caused by the test environment conditions.

Keywords: Array Antenna, LNA, Radio Module, VHF