

ABSTRACT

The developments in telecommunication technology has reached the fifth generation. One of the architecture design of the cellular network on the 5G is the Device-to-Device Communication Cellular Controlled. With the Device Discovery process, relationship building between devices and the Base Station can happen faster and more efficient and also help save the energy of the device. But not all Base Station can function optimally. If a disaster happened and the telecommunication infrastructure are cut off, device discovery process can't proceed.

The purpose of this final assignment is simulate the condition above in telecommunication network. Double Unmanned Aerial Vehicle (UAV) quadcopter type RF Devices installed used as the replacement of Base Station to perform device discovery process when disaster struck so the network would not be cut-off. There are three flying path scenario used, Rectangular-Path and O-path combination, Rectangular-Path and Zigzag-Path combination and Double S-Path with square shaped simulation area of 100 km² with the quadcopter altitude from 80-150 meter.

Based on the results of the simulation tested on this final assignment, the results between three scenarios which analyze on seven parameters is 80% device discovered successfully on Double S-Path. But total duration of flight on Rectangular & O path is three times faster than Double S-Path. In the event of disaster time is essential factor on disaster relief so for disaster condition it is recommended to use Rectangular & O path to be applied. Even though the difference of device discovered between Rectangular & O Path and Double S-Path quite big, but generally the utilization of double UAV increased the number of discovered device compared to when only utilize single UAV.

Keyword: *Device Discovery, UAV, Device-to-Device Communication*