

ABSTRACT

The development of UAVs in recent years has been very rapid, many countries in the world apply UAVs for various purposes, both for military applications and civilian applications. Pusat Teknologi Penerbangan (Pustekbang)-BRIN is one of the government-owned research and development institutions in the field of aerospace technology. One of the Pustekbang research projects is the creation of the Lapan Surveillance UAV (LSU). In carrying out flying missions, good and stable communication is needed so that signal loss does not occur during the communication process. The application of the communication concept in this study uses an Autopilot object as a UAV prototype which will send telemetry data to the Mission Planner as a Ground Control Station (GCS). The test is carried out by conducting a telemetry data transmission test in the form of a visual test, namely Level, Roll, and Pitch tests on Autopilot and sent via VPN tunneling using the UDP protocol on the Pustekbang-BRIN communication network scheme. The testing of the Pustekbang-BRIN communication network scheme was analyzed using the Quality of Service (QoS) method using the parameters of Delay, Jitter, and Packet Loss. The results obtained from this study are the lowest average Delay and Jitter values obtained in the L2TP VPN test, while the highest average Delay and Jitter values were obtained in the OpenVPN VPN test. As for the Packet Loss parameter, no missing packets were found, both PPTP, L2TP, and OpenVPN VPNs.

Keywords: *Unmanned Aerial Vehicle (UAV), Ground Control Station (GCS), Quality of Service (QoS), Virtual Private Network (VPN), Autopilot.*