

## **Communications Description**

A JR 9303 2.4 GHz radio transmitter will be used by the pilot to transmit commands to the Bergen RC helicopter. This transmitter provides direct pilot control of the aircraft throttle, collective pitch (main rotor pitch), roll cyclic (aileron), pitch cyclic (elevator), and yaw (tail rotor). During some flight operations, the onboard autopilot will be sent GPS waypoints from a ground station transmitting at 900 MHz. Using a three-way switch on the 2.4 GHz transmitter, the pilot can switch between manual mode, autonomous hover autopilot mode, and waypoint autopilot mode. Therefore, the pilot can activate autopilot modes and can manually over-ride the autopilot at any time. Data will be transmitted from an onboard sensor package to the ground station via a 5 GHz wireless network. A Ubiquiti Nanostation M5 will serve as the onboard router and a Ubiquiti LiteStation SR71 will be connected to the ground station in order to receive the data. These data will be processed on the ground station and used to compute GPS waypoints for the autopilot.