Ultrastick UAV Processor-In-Loop (PIL) Simulation Setup

RC Transmitter -> RC Receiver -> Servo actuator

Failsafe board

PWM -> PWM to USB Converter -> USB

PWM

PC running Simulink & flightGear display

Serial port

MPC 555

Mnav

6-DOF Simulink model

Air Data modem

Ground Data modem

Ground control station

Com port 1

Com port 2
Simulink Block Structure

Baseline simulation model

Actuator Block
Nonlinear Simulation Block (Aerosim)
FlightGear interface block

USB to PPM conversion block
MNAV Sensor block (Raw digital data)
Serial Com Port block

PIL Testing
PWM to USB PPM conversion block
Flight Control System block (s-function)

SIL Testing
AHRS filter block (s-function)

PWM converter
MPC555