

TO: Danny Jacobs
FROM: Mickey Horn
DATE: 10/20/2017
SUBJECT: ECHO Drone Design Specs

Below are the important specifications to consider for designing or modifying a new ECHO drone.

- 30-minute flight time
 - Reduce weight, increase motor/prop efficiency, increase battery capacity
- Waypoint based flight
 - Might as well stick with a Pixhawk
- Precise positioning and rotation
 - Weight distribution, motor position/thrust, resistance to wind gusts
- Folds up for storage (and flight?)
 - Keep legs away from transmitter
- Accessible area for mounting transmitter
 - Keep bottom of frame open, legs folding up will help
 - Would also be nice to have easier mount attachment
- About \$5k if building our own, \$20k if buying

If we were to design our own drone, I believe these are the rough steps:

- Choose flight controller/autopilot, radio for ground station, radio for controller
- Design a frame that is large, lightweight, fits above components+, and meets other specs
- Choose propellers based on frame size
- Choose motors based on prop length
- Choose ESCs to match motors
- Choose battery(s) and power distribution board to power everything
- Plan the build, perform final calculations and adjust if necessary
- Build, fly, collect data, adjust, repeat