# **AR.Drone Forward Sensor Test**

* **Read from forward sensors and put drone into hover state when within 30”**
  + Connect to AR.Drone.
  + Send drone hover command.
  + After 1 second begin forward flight.
  + Send hover command when detect object withing 30”.
  + AR.Drone lands after 2 minute flight time.

* **Pass Conditions**
  + AR.Drone takes off and hovers.
  + AR.Drone switches to forward flight state.
  + AR.Drone switches to hover state when within 30”.
  + AR.Drone switches to forward flight state when 30” object is removed.
  + AR.Drone switches to landing state after 2 minutes.
* **Test Results**
  + **Test 1**
    - Redback did not connect to the AR.Drone.
      * Unpaired then Reset and restarted drone, was able to connect.
    - **Failed**
  + **Test 2**
    - Redback Connected to AR.Drone.
    - AR.Drone nearly hovered in place.
      * This may be due to an issue with sending commands to the AR.Drone with intervals too long in between. Change from ~300ms to 30ms.
    - **Failed**
  + **Test 3**
    - Redback connected to AR.Drone.
    - AR.Drone started forward flight.
    - AR.Drone ran into wall and did not attempt to stop. It eventually hit hard enough that a propeller hit the bumper causing an emergency stop.
    - **Failed**
  + **Test 4**
    - Redback connected to AR.DRone.
    - AR.Drone took off in forward motion then hovered for a long period of time.
    - AR.Drone flew forward for several inches then stopped and went into hover flight for remaining battery life.
      * Attempt to re-write code to land after 1 minute total flight time instead of only during forward flight.
      * Possibility of checking other code for optimizations that could potentially cause the hover state.
    - **Not Failed**
    - **Not Passed**
  + **Test 5**
    - Redback connected to AR.Drone.
    - AR.Drone took off and hovered in place.
    - AR.Drone remained hovering until battery died.
      * Went through code and found in the forward flight state command that I was passing the string “forwardSpeed” instead of the variable for -0.3
    - **Failed**
  + **Test 6**
    - Redback connected to AR.Drone.
    - AR.Drone took off and hovered in place.
      * Went through debug prints and found that the sprintf function was passing garbage characters instead of the float value for -0.1 or -.1. Hard coded a “-.” in the string so forward speed will only be an integer and this is passing proper values.
    - **Failed**
  + **Test 7**
    - Redback connected to AR.Drone.
    - AR.Drone took off and hovered.
    - AR.Drone began forward flight and seemed to switch to hover but still crashed.
      * Did more research and found that will have to stop AR.Drones forward motion when switching back to hover state. I implemented a reverse state which will run for at least 200 milliseconds at a faster speed than the forward speed to try and stop AR.Drone in place better.
    - **Failed**
  + **Test 8**