## Flight Testing

Date completed: ________________________

Performed by: ________________________

### Specifications Tested

<table>
<thead>
<tr>
<th>Tested Specification</th>
<th>Description</th>
<th>Critical Value</th>
<th>Nominal Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2</td>
<td>The wing shall support the plane’s gross weight under +4/-2 G loading. The wings shall not become detached from the plane while in flight at this loading. The wings shall not deflect to a degree that interferes with the operation of the flight control surfaces (will not jam the servos) at this loading</td>
<td>+4/-2 G</td>
<td>+4/-2 G</td>
</tr>
<tr>
<td>1.3</td>
<td>The aircraft shall be structurally sound; no parts shall leave the aircraft while in flight</td>
<td></td>
<td>P/F</td>
</tr>
<tr>
<td>3.1</td>
<td>The aircraft shall be able to take off under its own power from a 1000 ft grass runway</td>
<td>1000 ft</td>
<td>250 ft</td>
</tr>
<tr>
<td>4.1</td>
<td>The aircraft shall have a flight ceiling of 400 ft</td>
<td>400 ft</td>
<td>400 ft</td>
</tr>
<tr>
<td>4.2</td>
<td>The aircraft shall be able to sustain a flight of at least 40mph in calm conditions</td>
<td>40 mph</td>
<td>45mph</td>
</tr>
<tr>
<td>4.3</td>
<td>The aircraft shall be capable of stable flight with a 15 lb payload</td>
<td>15 lb</td>
<td>15 lb</td>
</tr>
<tr>
<td>4.4</td>
<td>The aircraft shall sustain steady flight in a controllable manner for at least 20 minutes</td>
<td>20 min</td>
<td>30 mph</td>
</tr>
<tr>
<td>4.5</td>
<td>The aircraft should have similar flight characteristics to a trainer RC plane</td>
<td></td>
<td>P/F</td>
</tr>
<tr>
<td>5.2</td>
<td>The servos shall be of sufficient power to control the plane’s control surfaces at speeds up to 50 mph</td>
<td>50 mph</td>
<td>50 mph</td>
</tr>
<tr>
<td>6.1</td>
<td>The aircraft shall be able to re-launch as soon as it has been re-fueled or re-charged</td>
<td></td>
<td>P/F</td>
</tr>
<tr>
<td>6.2</td>
<td>The aircraft shall be able to operate for at least 12 regular flights without needing routine maintenance</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

### Revision History

<table>
<thead>
<tr>
<th>Revision</th>
<th>Description</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Document Created</td>
<td>3/18/2010</td>
</tr>
<tr>
<td>2</td>
<td>Test Procedures Updated</td>
<td>4/2/2010</td>
</tr>
<tr>
<td>3</td>
<td>Changed Flight envelope based on legal restrictions</td>
<td>4/18/2010</td>
</tr>
</tbody>
</table>

Revision 3- 4/18/2010
Flight Testing

Date completed: ____________________________

Performed by: ____________________________

Equipment

☑ Fully assembled plane (with electronics)
☑ Radio transmitter
☐ 15 lbs of 5 lb weights (sized to fit payload bay)
☐ Measuring wheel
☑ Stop watch
☐ Speed gun or on-board telemetry (if available)

Sections (To be performed in order, but may be combined as deemed fit)

- Part I Skip test
- Part II No load- Circle Pattern
- Part III Flight duration
- Part IV Loading tests
- Part V Flight envelope
- Part VI Imaging

Instructions

- Complete tests part I through IV in order
- Complete tests I though III with no payload first
- Part IV cannot be completed until tests I through III have been completed
- Part IV, step 1 must be completed for each payload before advancing to step 2
- Part VI may be combined with any of the prior tests, as long as the camera system weight is accounted for
Flight Testing

Date completed: 4-24-10

Performed by: Brian Snaza & Alex Furgiuele

Part 1 Skip test

☐ 1. Fully assemble the plane and all required components on a grass runway

☐ 2. Record the payload weight

☐ 3. Verify proper control response by actuating each servo channel and visually inspecting the corresponding servo movement

☐ 4. Verify radio range by pacing out 30 paces from the plane with the transmitters antenna down

☐ 5. Taxi plane to the runway

☐ 6. Increase speed until wheels lift off of ground

☐ 7. Decrease speed to return the plane to the ground

☐ 8. Record time to take off, runway distance used and take off speed (if available)

☐ 9. Inspect plane for possible damage, discontinue testing immediately in repairs are necessary

<table>
<thead>
<tr>
<th>Load (pounds)</th>
<th>Time to take off (seconds)</th>
<th>Take off distance (feet)</th>
<th>Take off speed (miles/hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6</td>
<td>~30</td>
<td>unknown</td>
</tr>
</tbody>
</table>

Pilot's Comments:

Sign off on section completion: [Signature]

Revision 3- 4/18/2010
Flight Testing

Date completed: 5/7/10

Performed by: Team

Part II Circle pattern

☐ 1. Fully assemble the plane and all required components on a grass runway
☐ 2. Record the payload weight
☐ 3. Verify proper control response by actuating each servo channel and visually inspecting the corresponding servo movement
☐ 4. Verify radio range by taking 30 paces from the plane with the transmitters antenna down, insuring the plane remains in control
☐ 5. Taxi plane to the runway
☐ 6. Increase speed until wheels lift off of ground
☐ 7. Record time to take off, runway distance used and take off speed (if available)
☐ 8. Bring plane above tree line
☐ 9. Fly the plane in a large circle, direction determined by pilot preference
☐ 10. Land plane on runway
☐ 11. Inspect plane for possible damage, discontinue testing immediately in repairs are necessary

<table>
<thead>
<tr>
<th>Load (pounds)</th>
<th>Time to take off (seconds)</th>
<th>Take off distance (feet)</th>
<th>Take off speed (miles/hour)</th>
<th>Circle Direction (CW / CCW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>~1.0</td>
<td>5</td>
<td>60</td>
<td>N/A</td>
<td>CCW</td>
</tr>
</tbody>
</table>

Pilot's Comments:

Plane was not at full power during take off.

Sign off on section completion: [Signature]

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Flight Testing

Date completed: 4-29-10

Performed by: Term

Part III Flight duration

1. Fully assemble the plane and all required components on a grass runway
2. Record the payload weight
3. Verify proper control response by actuating each servo channel and visually inspecting the corresponding servo movement
4. Verify radio range by taking 30 paces from the plane with the transmitters antenna down, insuring the plane remains in control
5. Taxi plane to the runway
6. Increase speed until wheels lift off of ground
7. Record time to take off, runway distance used and take off speed (if available)
8. Bring plane above tree line
9. Fly the plane at 'cruise speed' in a non-acrobatic manner. Flight path to be determined by pilot (must be gentle maneuvers typical of those capable of a trainer aircraft).
10. Land plane on runway
11. Inspect plane for possible damage, discontinue testing immediately in repairs are necessary
12. Determine the total power consumed during flight

<table>
<thead>
<tr>
<th>Load (pounds)</th>
<th>Time to take off (seconds)</th>
<th>Take off distance (feet)</th>
<th>Take off speed (miles/hour)</th>
<th>Flight Time</th>
<th>Remaining Power (mAh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>~20</td>
<td>N/A</td>
<td>6 min</td>
<td>6900</td>
</tr>
</tbody>
</table>

Pilot's Comments:
see flight test deviation report for details, plane failed to land

Sign off on section completion: [Signature]

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Flight Testing

Date completed: ______________________

Performed by: ______________________

Part IV Loaded Flights

____ 1. Repeat Part I with increasing loads (5lb increments)

____ 2. Repeat Part III with increasing loads (5lb increments)

Skip Test

<table>
<thead>
<tr>
<th>Load (pounds)</th>
<th>Time to take off (seconds)</th>
<th>Take off distance (feet)</th>
<th>Take off speed (miles/hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Loaded Flight Testing

<table>
<thead>
<tr>
<th>Load (pounds)</th>
<th>Time to take off (seconds)</th>
<th>Take off distance (feet)</th>
<th>Take off speed (miles/hour)</th>
<th>Flight Time</th>
<th>Remaining Power (mAh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pilot’s Comments:

Sign off on section completion: ______________________

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Flight Testing

Date completed: ________________________

Performed by: ________________________

Part V Flight Envelope

____ 1. Fully assemble the plane and all required components on a grass runway

____ 2. Install telemetry system

____ 3. Verify proper control response by actuating each servo channel and visually inspecting the corresponding servo movement

____ 4. Verify radio range by taking 30 paces from the plane with the transmitter's antenna down, ensuring the plane remains in control

____ 5. Taxi plane to the runway

____ 6. Increase speed until wheels lift off of ground

____ 7. Record time to take off, runway distance used and take off speed (if available)

____ 8. Bring plane above tree line

____ 9. Fly several circles at a comfortable altitude

____ 10. Land plane on runway

____ 11. Inspect plane for possible damage, discontinue testing immediately in repairs are necessary

____ 12. Download the telemetry data from the telemetry unit

<table>
<thead>
<tr>
<th>Max Speed (mph)</th>
<th>Max Altitude Obtained (ft)</th>
<th>Distance Traveled (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pilot's Comments:

Sign off on section completion: ________________________

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Flight Testing

Date completed: 5/7/2010

Performed by: [Name]

Part VI Imaging

1. [ ] Fully assemble the plane and all required components on a grass runway

2. [ ] Install available camera system

3. [ ] Verify proper control response by actuating each servo channel and visually inspecting the corresponding servo movement

4. [ ] Verify radio range by taking 30 paces from the plane with the transmitters antenna down, insuring the plane remains in control

5. [ ] Taxi plane to the runway

6. [ ] Increase speed until wheels lift off of ground

7. [ ] Bring plane above tree line

8. [ ] Fly the plane in a circle pattern taking pictures throughout the flight

9. [ ] Land plane on runway

10. [ ] Inspect plane for possible damage, discontinue testing immediately in repairs are necessary

11. [ ] Download the images from the camera system

Pilot's Comments:

[Signature]  

Sign off on section completion: [Signature]

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See Flight Test Deviation Report for details on the April 24th crash. Data from that flight regarding flight crew was still used.