



I had never seen the 84.6" foamy Horizon Hobby Carbon Z Cub at the WPMPA field so was eager to help program and trim Bryant Roberto's "CC" on Sat April 23, 2016. The model was reviewed on RCGroups in Nov 2014 and since then many mods have been made by others. Some are landing gear, prop, motor, ESC, and other modifications. Bryant swapped the stock hard foam tires for Dubro inflatable tires. They are a little heavier but with no air pressure there is very little bounce. The only mod I made was to mount a 7 channel Apprentice S receiver in the area where a Spektrum 5 channel non gyro receiver is mounted. I used 3 M Dual Lock Reclosable Fasteners. They are better than Velcro because they keep the receiver from slight movements and the 6 internal gyros do not get "confused"! I did CA a 1/16" thick plywood mounting plate onto the foam to support the Dual Lock Fasteners.

The two Apprentice dip switches were kept in the stock position (off) and the long antenna was taped in place facing the tail. The short antenna was taped in place facing the nose. I had to reverse the direction of ailerons on Bryant's DX7 "talky" transmitter. After running up the motor briefly to 25% throttle and then idle/throttle cut I performed the "Self Level/Beginner" test on the receiver gyros. Lifting the tail as in a dive the RX gave up elevator. A yaw gave opposite/opposing rudder for correct "heading hold". However when put into a left roll the right aileron went down instead of up. Installing an \$8 servo reverser between the aileron servo slot and aileron Y cable fixed this. I had to go back into the DX7 servo setup and switch the ailerons back into the normal position. One can save the cost of a reverser by mechanically changing the aileron direction by rotating one servo 180 degrees and relocating the aileron horn. However we were anxious to fly and did not want to spend 20 minutes doing that.

On the first flight I noticed an uncommanded twitch at about 300 ft away so I landed and did a ground range check. Pressing the bind button I was suppose to get 30 meters (98.43') but only got about 25'. I moved the long antenna to the co pilots side away from servo wires and taped



the short antenna vertically down. This increased the range to about 110 ft. The RX had previously been tested using my Apprentice dual receiver test aircraft out to about 1200' where the 60" model is almost out of sight. So antenna placement away from wires and perpendicular to each other is important for full range in any model that you put the \$110 retail (\$65 discount) Apprentice receiver in. Two other trim flights were flown to adjust aileron, elevator, and rudder throws without any range issues. The takeoff and landing flaps with down elevator compensation (in "Self Level" mode) as well as flap up stall prevention were programmed in to elevator throws. The Carbon Cub with the flight control throws established will not stall with full up elevator either with full power or power off/idle. With power off and full up elevator and full aileron and rudder the CC will do a nice left or right spiral but not spin. Simply releasing both sticks will allow the Self Level gyros to stop the turn, level the wings and bring the nose up to level. On a practice dead stick glide I was able to do a nice side slip with full aileron and opposite rudder. Future flying will be with DX9 to DX7 wireless buddy box training so Bryant can see the differences between his 3 lb Apprentice and his 8 lb Carbon Cub. Despite the receiver being about 8" away from the CG I did not see any abnormal gyro movements. Using half throttle stick and full aileron and rudder with some up elevator will do nice level turns with maybe a 30 ft radius compared to the Apprentice radius of about 20 ft. The Self Level restricts bank to about 40 degrees where the Intermediate is about 60 degrees and Experience Mode is unrestricted. The stock black nylon 15 X 5 E prop gave some vibrations at full throttle so hovering was not attempted until that prop or a Xoar 15 X 6 wood prop is tested. A \$30 articulated landing gear for the 11.4 lb Hangar 9 Carbon Cub will replace the stock gear as soon as Bryant receives them. Bryant swapped the stock wheels for the Dubro Inflatables and with no air in them the wheels and tires greatly reduce bounced landings.

On Sat afternoon (4/30/16) final clevis and pushrod adjustments to match ailerons and flaps were made. Switching to the wood 15 X 6 Xoar prop eliminated the stock prop vibration. Bryant's DX 7 TX was bound to the Cub and a short flight revealed loss of control for about 5 seconds at 500 ft away. An immediate landing was made. A reduced power range check revealed only 15 meters. Moving the long antenna outside the fuselage and vertically down did not improve the range. We bound my DX9 to the Cub and a reduced power range check was measured beyond 30 meters. Bryant is using 1.0 firmware that came loaded and hopefully the range will improve when he updates to the latest firmware. A call to Spektrum will report this incident for their response.

We used my DX9 as instructor and Bryant's DX7 as student with good range checks. This is because the Student's TX is bound to the Instructor's TX and the signals are transmitted to the model using the Instructor's transmitter. Two 8 minute flights (using two 6S packs) verified Self Level as well as loops and rolls in Experience Mode. No tip stalls were seen with full up elevator and high rates either in Self Level or Experience Mode. Bryant was able to get some orientation maneuvers which included practice dead stick descent and go around as well as a

few power off spirals in the self level mode. The sun was going down and the mosquitos were coming out so we stopped flying. Next outing will be to verify range and resume training with landing patterns and takeoffs.