

Gordy's Travels #9

Home in - On the Range.... Check!

We often have heard about how important doing a simple range check is to check up on our Transmitter's connection to our sailplane's Receiver, and pretty much we all know how to do it...but that was the good old days.

I recently had one of those months, definitely a trip I hope I never experience again. Two brand new molded planes destroyed after just a few flights.

I had heard of planes having reception problems due to high carbon content in their fuselages but most of the reports were from Europe....now I guess that makes sense because Euro's tend to only fly molded planes with mostly Carbon fuselages and until recently we flew mostly Kevlar fuselages.

It seems the worse signal 'blanking' problems occur in planes which use a coarse weave, sort of like burlap, cross Carbon/Kevlar weave. The material seems to create a 'choke' which kills the Transmitter's signal in the Receiver's antenna, in effect cutting its length.

And that means lost range.

I had gone to the website focused on the molded planes I had, and had read the comments and articles about how it was important to route the antenna outside the fuselage... But since "I" knew so much about the hobby, I didn't really read the articles in detail.

And I didn't believe that their advice, but more importantly I didn't do a range test.... Actually I never have...not once in my time in the hobby.

So I lost the first model almost on the first day of flying. I was getting glitched but the plane seemed to be flying okay. Until I got a little further away and it went in hard.

I had remembered something about having the antenna outside the fuse, so on the next model, I ran it outside the canopy and along the fuselage tail boom – but again, no range check.

I flew this one a few times and it had some problems but it seemed to fly far out okay....then finally it went in. Fortunately it landed in a hay field and sustained pretty minor damage.

So, that night I went back to the website and read the notes more carefully. The first thing I found there was this note: Don't run the antenna out the canopy, its almost as bad as running it in the fuse! Dup! After reading more, I found that they had done lots of real world testing, finding alternative routings for the

antenna. One key factor in their success was to get the antenna not only outside the fuselage but 'away' from the fuselage.

I also heard from some other guys here who had run into the problems with range with the same model...now don't even think it's just this particular model, because I have since heard of other models using the same weave material. Some guys in Denver had the same plane but the 'light' version which mainly had a lighter wing with only the area forward of the spar made of carbon. They had found that they could use the 9th pin of their 9pin D connector to route the antenna into each side of the wing. They also found it didn't work on the full carbon lay-up wing that I had.

I was pretty fed up with guesses, so I decided to figure out my own 'range test'. I own a Picalario Talking Altimeter which has a glitch warning feature. That means if the servos get to jiggling, a lady announces "Attention, Attention, Attention". This meant I had a tool to specifically gauge range loss during a 'standard' range test.

So I went to the park set up the plane in my Super-Stand and sat down to think about the best way to perform the range test. I decided that I needed to find a benchmark to start from... a set up that would provide me with an antenna down, measured distance.

I figured that if I took the Receiver out of the plane, and then plugged in 6 servos and battery, with the antenna hanging free of any obstruction, that should be the cleanest possible set up for my distance range test.

With the Picalario plugged I paced off 350' before I got an "Attention". Wow! I had tried a test the way I had been flying it and that produced about 35'.

The website mentioned the best they had found was to run the antenna in the fuse, exiting the fuselage top just behind the trailing edge of the wing...adding at least the amount of wire that was inside to the wire extended outside. Then to run the wire up to the top of the vertical stabilizer, letting the rest trail behind, Uck! But better than losing the plane, so I decided to add about 20" instead of just the 10" in the fuse, then to trim back till it affected the optimum range.

Okay so with all of the on board stuff hooked back up and the RX in the plane, and the antenna routed in the fuse to just behind the wing to exit, extended that 20", I began my tests.

Each time I got the optimum, I would trim off an inch...I didn't want a bunch of wire flopping around the back of my plane. Sure enough, I got to where the antenna was 2" longer than the tip of the vertical and I still had full range.

Just to double check that having it taped to the outside of the tail boom would have a negative effect on range, I tape it along the boom, with the excess dangling...and almost all that range was lost.

The wire's total length ended up being almost exactly the same amount that was inside the fuselage.

It's not the good ole' days anymore, things have changed, definitely for the better. Those fuselages are super stiff, light and durable, but they can cause some radio range problems if not understood and measures taken to insure clean reception.

If you have one of the new breed molded planes, take the time to set up with the RX and servos outside the fuselage. If you don't own a Picalario, just have someone stand by your model to signal you when they see a problem. Move only one surface consistently, and then start counting your paces to find your systems optimum potential range. Load everything back inside, including the antenna wire as you have in the past. Then do the test again to see if you have been actually enjoying the best possible range.

Your TX antenna (top mount) should be completely collapsed, which will leave only the first segment extended. 'Inny' mount antennas which collapse completely into the TX, leave one segment up...about 6".

The idea is to find out what the best possible range is, then to try to reach that with your antenna location. Things like carbon or steel pushrods, powerful servos are also considerations for decreasing range. Using Torrodial Rings (iron rings), electronic chokes, etc can cut down on jiggles caused by signal feedback from long servo leads and power wing servos, but jiggles can also be an indicator that it might be wise to get more serious about antenna placement.

PCM radios 'mask' interference and signal loss... creating a sort of ignorance is bliss situation for some modelers, do your range testing with a non-PCM system, then once you have determined your best Receiver antenna location reinstall your PCM.

Our sailplanes are expensive but mostly they are hard to replace, it's worth it to take some extreme precautions to protect them. Give it a try and I think you'll be less likely to 'stumble' with your next soaring adventure.

Oh yeah, I said, "Two new molded sailplanes destroyed..", the second one worked so well that I flew the battery out ☺.... I guess I still have a lot to learn.

Coming down the road is a review on a new FM, Channel Synthesised, Digital Signal Processing, Micro 8 channel Receiver, which allows you to pre-scan the frequency you are set on to see if someone else is on that frequency. It will also

allow you to maintain control of your model if someone else turns a TX on your
Frequency! See you next trip!

Gordy