

A Low Noise Receiving Antenna

Three weeks ago, I spent the money and purchased a Wellbrook loop antenna.

They seem to be extremely pricey but, maybe not so much, as I am finding out.

Here, at my location in Colwood BC, I have been using an inverted L as my main antenna, backed up by a 43 foot vertical for the higher bands. Both antennas have worked well for me but with band conditions the way they are, my biggest problems have been to hear incoming signals rather than to worry about being heard by other stations.

Now, when I moved to this location, it felt like I was in Ham operators heaven. All power lines in my area are underground and there was so little noise, this location seemed to be the holy grail for ham radio. Fast forward to the year 2020 and that is no longer the case.

If I listen on my inverted L antenna, the noise is so strong that it registers a solid S-9 most every night. That means, any signal I want to hear clearly must exceed that strength or it is lost in the hash of the interference. No fun, believe me!

I tried all the usual stuff in an endeavor to find the source of that interference and eventually was able to diminish the strength of the noise by 2 S-units. Not great, but nevertheless huge in terms of being able to copy desired signals. As we shifted into summer, I noted a steady increase in the ambient noise until it finally reached the level where it had previously been. Talk about a bummer.

What do you do? I started researching ways to address that issue. One of the things that kept coming up was to use an active loop as a receiving antenna and to transmit on my inverted L. Obviously no amount of noise was going to have much effect on my signal when I transmit. If I could solve the receiving issue, I figured all would be golden.

Enter the MLA_30+, a receiving loop from China. I found dozens of reviews of this antenna on Youtube. Based on those reviews, I purchased one through Amazon.ca, knowing that if I had any issues with it, Amazon would back me up.

At \$65 for that loop, I would say it looks to be overpriced when you get the package but once connected and working I had to admit, it did make a huge improvement over having to listen on the Inverted L. My listening enjoyment had just jumped up a notch. The usual S-9 noise level on 80 meters was reduced to S-5 or thereabouts.

Then it rained. The loop quit working. This came as a total surprise to me since the electronics seemed to be well packaged even to the point where the loop amplifier is encased in epoxy. That was a head scratcher. However, the following day the loop was back in business. Who knew why, but it was working, so I proceeded to make multiple comparisons between it and other antennas. After a couple of hours of use, the antenna became intermittent and then ceased functioning altogether. This time it did not come back and no amount of cajoling could get it to work. Ahh!

Now my dilemma was to continue with the far less costly antenna, in other words, buy another and hope it would work for a longer period of time or explore alternatives. I knew there were several other companies that were selling active receiving loops but all of them were much more costly than the Chinese made loop.

Being the naturally cheap Ham op, I opted to try a receiving loop with a pre-amp purchased from Amazon. That too turned out to be a failure. Performance lacked what I hoped for quite dramatically.

Finally I decided to spend the money and buy one of the Wellbrook loops from Great Britain. I had it in my head that their loop amplifier was the best. Four hundred or so dollars later, I found my Wellbrook loop on my doorstep.

You might think I would have rushed to get it assembled and tested but that did not happen for the next few days as I had other projects to finish. Finally I managed to get around to it and connected it to my SDR receiver. It worked, though initially I had some doubts, it was so quiet. Yes I could tell it was working but the question remained, how well?

The dreaded band noise, when listening on the loop was much lower. This I found encouraging and determined to find the optimal location in my yard to set the antenna. I eventually settled on a spot away from the house and other interference generating locals. Now, when I listened on the 80 meter band, the signal meter in my radio indicated a noise floor of less than 2 S-units. Could it actually be correct. Had I really managed to drop the received noise from S-9 down to less than S-2? I had to test it out on some "known" signals at a time when I could compare it to another of my antennas.

I pieced together the items I needed to connect to my Icom 7300. It is equipped with an accessory that allows me to receive on one antenna while having the ability to transmit on a alternate antenna.

It seemed like nothing short of a miracle when I switched the transceiver on and saw the S meter hovering between 1 and 2 S-units of noise while noting that the signals I was listening to were bouncing to a strength of 7, 8 or S-9. I describe it as unbelievable! Fantastic! Worth every penny!

Time has shown me that a received signal will be down by about 2 S-units on the loop as opposed to listening on the inverted L. But, and it's a huge but, I can hear a signal that only shows 2 - 3, S-units on the strength meter whereas I would never have known that station was even there before getting this loop.

Since then, I have managed to get the MLA-30 working, with a larger diameter, more substantial loop and I have to say it does a respectable job, however when compared to the Wellbrook loop, it is no contest. On 80 Meters, the MLA-30 receives with a noise floor of S4 – S4.5 whereas the Wellbrook loop shows a constant noise floor of slightly under S-2. That suggests to me that the MLA-30 is a reasonable antenna for anyone's needs but the Wellbrook loop is just that much better and when it comes down to which will I listen with, it is going to be the Wellbrook loop. Is anyone looking for a slightly used, enhanced version of the MLA-30?

Update!

I have now used my receiving loops for roughly 2 months. In that time I have learned that my original opinion of the loops and how well they perform is not precisely how I had presented it. At the time I wrote the article, I had no way to connect the Chinese MLA-30 to my Icom radio. What I had done was to connect it to my SDRplay radio while I connected the Wellbrook loop to the Icom. I was able to tune both the Icom's receiver and the SDRplay to the same frequency and that made it easy to make a comparison. My bad!

As it happens, I simply assumed that the Icom receiver's S-meter would read similar to the SDRplay's receiver or at least close enough to give me some valid results. Not so.

Since that time I have had the opportunity to purchase the necessary adapters to allow me to connect both the MLA-30 and the Wellbrook loop to the Icom. (SDRplay uses sma type connectors and the Wellbrook loop uses BNC type connectors).

Now I can do a comparison that is much closer to being fair. It was to my surprise to find that the MLA-30 compared much better to the Wellbrook loop than I had figured it to do, based on my earlier experience.

When I see a noise floor of s-2 to s-3 while using the Wellbrook loop, I now see only 1 s-unit of difference between the two antennas. And when I observe the noise floor on the SDR displays, I see that confirmed visually. This tells me that the MLA-30, while not quite up to the Wellbrook performance is certainly not significantly poorer.

Considering that the Wellbrook loop cost me \$400 and the MLA-30 cost me \$65 dollars, I feel that cost to performance, the MLA-30 is a good choice.

But!

I have a friend that has switched to the MLA-30 as a receive antenna who does not achieve the same results as I do. True, he does see a reduction in local noise but not to the degree that I do. He has the same radio and presumably the same antenna but he is located in an older part of town where the houses are situated much closer to each other. I use the word presumably because there are two different models of this loop, the MLA-30 and the MLA-30+. I have the plus. I do not know which one he has.

I know that some of the noise I receive is of my own creation but with the ability to park the loops away from my house, and with the results I get, I am simply not inclined to bother to track it down and spend a lot of time trying to eliminate that noise.

As the saying goes "Your mileage may vary".