QRP Discussion, George Waltsack, KN4AHN

QRP Talk Tonight I am going to talk about low power operations, otherwise known as QRP. Typically, it is operations a 5 watts or less, sometimes 10 watts for sideband. I talked to a guy on 80M that considers anything under 600 watts on 80 as QRP, but for tonight I am just talking out the standard 5 to 10 watt definition. Who here is into QRP, or wants to get into it?

Now we know who the masochists of the group are! But seriously, it is a challenge, and it definitely isn't for everyone. Anybody that looks at a QRP rig as a less expensive way to enter the hobby will have a totally different experience than they want and in the long run will probably think that it is too difficult and either buy a different radio or drop the hobby and find something else to do.

Now that I have touched on what is wrong with QRP operations, why would anyone want to do it? Number one reason is for portability. If you are running a true QRP transceiver, it is small, light and uses very little power so that small batteries last a long time. It is fantastic for Parks on the Air or Summits on the Air, being able to put all the gear you need in a small pack and easily carry it around and do all kinds of fun stuff. This helps keep you prepared if there is an actual emergency and also means that you have less stuff to carry with you. Another thing that you gain is efficiency in your operation, this is out of necessity, not necessarily by choice. You need to be more strategic to get heard, which leads to better skills in antenna optimization, timing and understanding of propagation. With this efficiency and low power, it means you are better equipped in an emergency when power sources may be limited. And the final importance, satisfaction. Along with everything that I have mentioned, hitting DX with QRP, especially when very far, feels incredible when you are able to do it.

Other than the actual power, there are a couple things that are different than in normal operations. Like I mentioned before, the radios are small, some are palm or pocket sized. They don't need to be big to be functional. As with any transceivers, you can get them with varying options, most often the smallest radios are feature poor, but there are some very well-known higher end radios out there for QRP, namely the KX3, IC-705 and the new Yaesu FTX-1. They are very nice and extremely capable radios that are very much out of my price range.

Another major consideration that you need to have is for your antenna. Efficiency is key. Using a directional antenna, like a yagi, can help overcome the low power aspect, but as far as portability, especially if you are hiking and bringing other gear, something as large as a yagi is not usually practical to bring. Most often I see dipoles, end fed half waves and vertical antennas. Efficient, a little directional and easy to pack and carry. Pair that with a reasonable length, thinner coax, and that is it.

I'm not going to lie, operating QRP has always seemed a bit of a mad man's farce to me, but at the same time, intriguing. Yes, I can always turn down the power on my home radios to operate QRP, but to be honest, I just don't. If it has the power, I am going to use that power. Momma didn't raise no dummy; and I want to get my signal out! I ultimately got a Xiegu G90 to putz around with. I had hoped for a 10 watt radio, like the IC-705, but there are none that I can afford, and at the same time, I didn't want to take that step to 5 watts and be true QRP. It has always been my belief that to go 5 watts or less, I should be fluent on CW, which at times I practice and get to be almost ok, but I am not to a point where I want to do more than try once or twice to contact someone. The G90 is a very capable radio, built in tuner that can tune a fence, not very large, and enough power to get out. Only 20 watts, but I have been able to hit Europe consistently with a simple hamstick mounted on the roof rack of an F-150. I have been extremely impressed with it, 160 to 10 meters, it can do an SWR scan, pretty rugged, it doesn't have a lot of signal filtering, but it does work.

There are a lot of cheaper, 5 watt, true QRP radios on the market with all kinds of mixed reviews. What I am talking about is the usdx/usdr/micro sdx/micro sdr radio family. It all started with the QCX which was designed by Hans, G0UPL. It is a single band 5 watt CW radio that was manufactured and sold by QRP Labs. A few years ago, DL2MAN, Manuel and PE1NNZ, Guido, started the USDX project, or otherwise known as the QCXSSB project, where they took the CW QCX hardware, and with a firmware change, were able to add SSB, which it then became the USDX transceiver. It was genius, the problem with this was after they developed it, it started being cloned like crazy by all kinds of shady Chinesium sellers, and you never knew what quality radio you would get. Some are great, some are most useful as paperweights. Years later, Manuel and Guido developed the TruSDX and are keeping it under their control and making sure that it is made by licensed builders to ensure a quality product.

The TruSDX is a small 5 band SDR transceiver with a 3D printed case. You can get kits to build or buy them assembled with a 3D printed case. If you buy it assembled, it will be a Lo band version, 80, 60, 40, 30 and 20 meters, if you assemble it, you can get a high band version, that's 20-10 meters, or the classic band version, which is 80-10 with no WARC bands. It is a bummer to not get all HF bands, but I think that is a pretty good tradeoff for what you get.

You are probably saying, it is a small, 5 band QRP transceiver for $123 dollars, how much more is there to expect? Let me tell you. For starters, on a 13.8V power supply, it has a 5 watt output, but you can also hook it up by 5v micro-USB and it has an output of .5 watts. It has CW, LSB, USB, FM and AM modes, a massive 0.96" OLED display, built in microphone with external microphone jack, built in tiny speaker with external speaker jack, SMA coax connector, a dial and a couple buttons. It does contain the other usual stuff, volume, filter width, tuning rate and AGC. Digging deeper is where this little bad

boy shines. It has CAT controls over the micro-USB connection using Kenwood TS480 commands. Yes, CAT controls. But if bringing a computer out in the field to operate digital is a bit much, you can install FT8CN or other apps on your phone and use your phone as the computer to operate digital on. I have done this, it does work. Ok, so let's hit on some other 'real' features. It has a built in CW decoder, built in SWR meter, attenuator, noise reduction, vox, a 3.5mm jack that can switch an external amplifier on and off, and the beta firmware even has a spectrum scope! All this stuff, in such a tiny package is crazy.

That being said, if you do get your hands on one, it will operate right out of the box, but there are a couple things that you will probably want to do before starting. Manuel, DL2MAN has done a lot of work on the TRuSDX, making a very comprehensive manual on it, and has many detailed videos online that I suggest you watch. First, you have to use a special program to update the firmware so that it displays your call sign. There is a Beta version that trades a couple features for others, just something to look into. Then you need to set your reference frequency. When you first go to use it, your transmit and receive frequencies may be off, calibrating it is very easy, but it is all in the manual and detailed in the videos, I am just too lazy to go over the programming of stuff right now.

I got this TRuSDX for Christmas and have had a bit of time now to play around with it and give my non-technical review of it. Bottom line, it works! Audio quality isn't great on the built in speaker, the display is small, and sometimes the menu is aggravating, but seriously, look at this thing. It is tiny, it has extremely low power, and it does what it is supposed to. I have used the FT8CN app to make FT8 contacts with my phone. I have made voice contacts using the internal microphone with good signal reports. There was also a time I was messing around with it, just to adjust settings or something like that. I had it hooked to USB power from my phone just to have it turned on and it was hooked to a 20M hamstick on a truck ladder rack because I do not like to have a radio powered on with no antenna or dummy load. After awhile of tinkering, I heard someone on the air and decided to make some contacts. On my 3rd or 4th contact, getting 57's and 59's, I realized that I never hooked it up to 12V. That means I was making voice contacts on 0.5W on a compromise antenna! Nothing DX, but I hit Alabama and Michigan, which I still can't believe.

And for the most important question of all, So What? Bottom line, is it worth it? For $123, heck yeah! Great for testing things out and playing around with. 5 bands on multiple modes, along with the other features, dollar for dollar, this blows me away. Are there better QRP transceivers out there? Definitely, but chances are you will pay a good bit more for them. If you want to dabble with QRP operations, this can be a decent option. I do have to throw in this disclaimer that hopefully everyone here is aware of. If you are a new ham, this or any other QRP radio is a terrible idea.

Operations at 5 watts or less is a struggle, even when it goes well, it is difficult to break into pileups and if the band conditions aren't great, it can be next to impossible to make any contacts at all. For more experienced operators looking for a challenge, that is what low power is all about. When you do make those contacts, when you do manage to get DX on such low power, it is extremely exciting and rewarding. After my experience with the TRuSDX, my opinion of QRP has changed a bit. It does work, it is fun and I will continue to play around with low power during POTA operations. It will not replace operating at full 100 watts for me, but it definitely makes going out in the field a whole lot quicker and easier. The opportunity to challenge myself is exciting, it gives me all that much more reason to go out and play.

Any questions?