Operating QRP Portable
for DXing, SOTA, Field Day, and just Fun with the IC-705

by
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Recently, Steve KI4KWR presented a program discussing the new ICOM IC-705 transceiver. I I purchased one from GigaParts last fall when they became available. As Steve showed us, this SDR radio is remarkably capable with a boatload of features crammed into a small package. ICOM offers a nice backpack to carry the radio and the AH-705 antenna tuner plus lots of accessories. After looking at this backpack, I just didn't see that it was worth $170! However, until a few weeks ago I was still trying to figure out a useful way to make a Go Bag for the IC-705 and the concomitant items, and for a reasonable price. While I was looking around the house and shop for items to donate to the Purple Heart Charity, I found a new camera case I got as part of the "bonus package" of items that came "free" with a new camera I purchased several years ago. The case still had the tags on it and I figured the Charity could sell it and generate a few bucks. But then I opened it up and immediately realized that the IC-705, tuner, and big battery should fit into this well-made and padded case. So, the camera case came off the donation list and I found some more stuff to give them. A free case was more attractive to me than a $170 ICOM backpack.

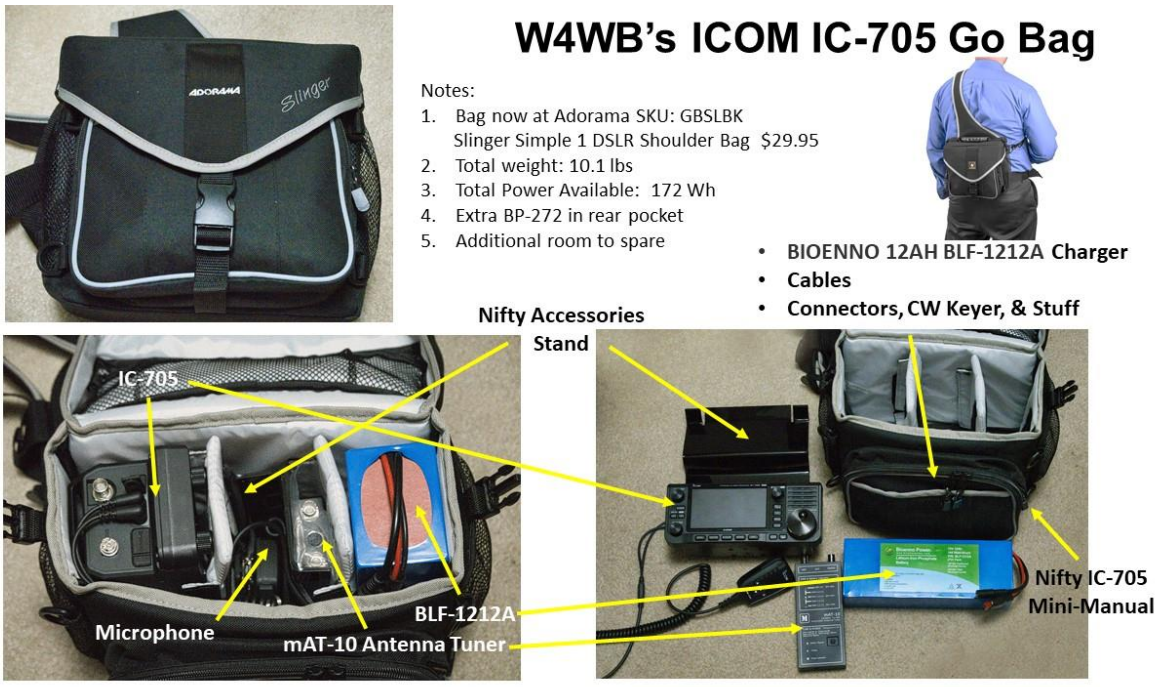

Figure 1. W4WB's ICOM IC-705 Go Bag.

Figure 1 shows the camera bag and how I configured it to hold all of the stuff I needed to include in my idea of a Go Bag. Although the case has a handle to carry it by, it actually was designed to be worn as a backpack as shown in the upper right of the figure. It goes over your shoulder with a comfortable strap and there is a waist belt to keep it from bouncing around as I walk, hike, and perhaps stumble. With all of the items shown, the total weight of the package is just 10.1 pounds. The kit has two ICOM BP-272 batteries that allows the radio to transmit up to 5 W. The

BIOENNO battery allows the IC-705 to transmit at 10 W. With the total available power of 172 Wh, one can use the radio for a day or more. The Nifty Accessories stand is an item I would never use the radio without. It is lightweight and holds the radio a just the correct position as far as I am concerned. To use about any type of antenna with the IC-705, I have a mAT-10 autotuner included. The front pocket of the case holds cables, connectors, my Palm Radio paddles with the Code Cube, charger, etc. In the side pocket, the Nifty IC-705 Mini-Manual is located and I have found this manual to be very handy.

Currently, I sometimes use a bhi, ltd.[1] external speaker with their DSP noise cancellation technology. It works better in my opinion than what is in the IC-705. Years ago, I mounted a bhi DSP board inside of my FT-817 and what a difference it made! It became an install service at W4RT Electronics and was quire popular. Graham, owner of bhi, ltd., recently sent me some photos of the NEDSP1901-KBD installed in the IC-705 by one of his adventurous customers. As Graham commented "Installation in the IC-705 is not for the faint of heart! The radio is tightly packed with boards and cables, and the SMD coupling capacitor that needs to be removed from the low-level audio path is extremely tiny, as are the BHI NR connections!" See Figure 2 to appreciate his comment. Nevertheless, I am staying with the external speaker for now.

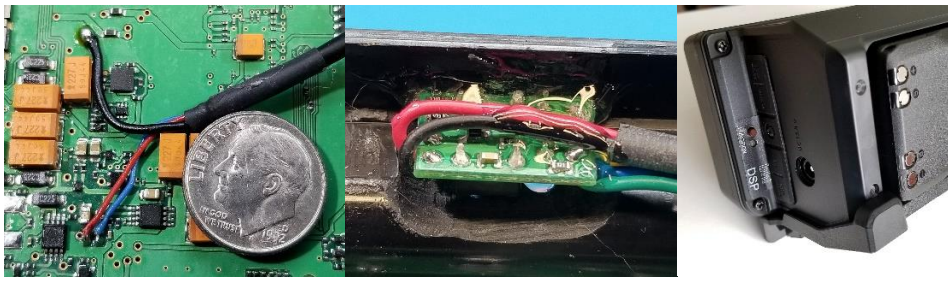

Figure 2. bhi NEDSP1901-KBD installed in an IC-705. Clever positioning of function button.

Figure 3. Wonder Wand antenna with counterpoise.

Not shown in Figure 1 is the Wonder Wand antenna and its counterpoise attachment. The Wonder Wand can fit into the case while the counterpoise fits in the front pocket. Figure 3 shows the IC-

[1] https://www.bhi-ltd.com/

705 on the Nifty stand with the Wonder Wand antenna attached and the Wonder Wand counterpoise plugged into the antenna unit. The counterpoise wire should be run out away from the antenna and kept off of the ground at least a meter. There is a general "rule" that a counterpoise wire should be kept at least λ/40 above the ground. The whip length is about 54". This is certainly not a great antenna, but it does work (better than light bulb).[2] Back in the peak of the last solar cycle, I used this antenna with my FT-817 (5 W) to make a number of DX contacts including a station in Brazil on 15 m SSB.

Figure 4. B&W AP-10 Portable Antenna.

Over the years I have tried numerous portable antennas for QRP activities. Perhaps my favorite is a 135' long-wire antenna deployed into trees using the EZ-HANG Antenna Launcher[3]. Of course, an antenna tuner and a counterpoise are appropriate to use in this case. As I mentioned already, the counterpoise wire should be about a meter about the ground. Best matching and radiated power can be realized by using an MFJ-931 Artificial Ground[4] or equivalent. I have found that matching to the antenna typically required the process of tuning the ATU, then adjusting the MFJ-931, and then doing this again a time or two more. You can observe the field strength increase as you perform the matching process. Back when I still traveled significantly for business, I often took my FT-817, MFJ-931, and the B&W AP-10 Portable Antenna[5] shown in Figure 4. I had learned which hotels had windows at least on the fourth or fifth floor that would open adequately for me to mount the AP-10 and to deploy a counterpoise wire outside of the building by just dropping it with a small weight on its end. I made lots of CW and SSB contacts mostly on 20 m and 40 m.

Another good portable antenna is a vertical made using a wire held up by a SOTABEAM mast. Mine is 33-feet tall and is held erect using guy lines. An inverted-Vee antenna can also be erected, but it is wise to attach another line to the mast top to counteract the bending caused by the force exerted by the antenna. In both cases, the MFJ-931 is useful to provide an artificial ground.

All of the antennas mention so far can be carried by a single person who also carries the Go Bag. Nevertheless, it is always a prudent idea to go on an outing with at least one other person who can perhaps carry food and drinks. 😊 With another person or so available, more effective antennas can be deployed such as the Buddipole[6] and Hex-Beam. Budd W3FF developed the Buddipole

[2] Thomas H. Schiller (N6BT), "Everything Works," https://www.okdxf.eu/files/everything_works.pdf.
[3] https://www.ezhang.com/
[4] https://mfjenterprises.com/products/mfj-931
[5] https://www.bwantennas.com/instructions.html (click on AP-10A Window Antenna).
[6] https://www.buddipole.com/

about 20 years ago and it has become sort of the standard in rapidly deployable dipoles. My Buddipole package is shown in Figure 5. The bag is about 42" in length and weighs about 13 pounds. The mast mounted in the tripod positions the dipole at about 18 feet and can operate from 7 to 54 MHz by changing the taps on the coils and lengths of the adjustable radiator elements.

Figure 5. Buddipole Antenna System for 6-40 m and provides tripod with mast and guys.

Recently, Budd and his son Chris have developed a tripod and mast system that is sold under the name of Mastwerks™. With this mast system, one can have 4 m, 7 m, and 10 m elevation. The mast can be rotated manually by a hand crank or by a remotely-controlled motor. The Buddipole dipole interfaces beautifully with this mast system. If you would like to see this system in action at a west coast Field Day activity, the see the movie at https://youtu.be/i-G49ZLwA4k.

Figure 6. Hex-Pac for rapid assembly of a monoband Hex-Beam from 20 m to 6 m.

Figure 7. The Hex-Pac opened up.

Figure 8. Hex-Beam for 15 m assembled from the Hex-Pac mounted on a Blue Sky Lite mast.

Having a rotatable dipole is nice, but having a beam is even better. Mike Traffie, inventor of the Hex-Beam, produce a very few Hex-Pacs (shown in Figure 6) which is a shoulder-carried kit that weights 13 pounds. I am blessed to have one and sincerely love it! With the Hex-Pac, one can in 10-15 minutes assemble a monoband Hex-Beam from 20 m to 6 m. Figure 7 shows the center support, various arm sections used to construct the proper length arms, and the radials for each band plus Mike made me extra radials for the CW and phone bands on 20 m and 10 m. Raising this beam is perhaps a challenge. It can be "floated" in the air using ropes to raise it and a pair of lines to rotate it assuming there are cooperating trees handy. Figure 8 shows a Hex-Beam for 15 m mounted on a Blue Sky Lite mast attached to the trailer hitch on my Blazer. The Hex-Pac and the Blue Sky Lite kits were in the back of the Blazer and while at a friend's home, Ralph N5DOI and I did a deployment demonstration by assembling the Hex-Beam and mast in under 30 minutes. In this case, the beam was at about 25 feet. I have also interfaced this monoband Hex-Beam with the old Buddipole mast and the beam was about 20 feet height and worked rather well. My plan is to acquire a 10 m Mastwerks system and construct an interface between it and the Hex-Beam center post. The Mastwerks is a much stronger and capable mast system than the old system. As I mentioned before, it is wise to have one or two friends go on an outing for not only safety and hauling stuff, but for everyone to experience the enjoyment of operating in the field.