

Relaying APRS off the International Space Station

By Russell Hall N8RSH

It may sound hard, but using the International Space Station (ISS) as a Digipeater is really quite easy. Having the right equipment and software ready before the station makes its pass over head is key to making a successful exchange. The space station is only overhead for a short period of time, during which you can make contact. A good site to find the space station path pass predictions is at amsat.org. After typing in your location information, you will have a good idea when the space station will be nearby.

The easiest way I have found to track the space station in the sky is at dusk. By using NASA's spot the space station program on their web site, you will know where the space station is traveling from and to. At dusk or dawn, you will see a shooting star moving in the sky. That is the space station. Once you can see the space station position, all you have to do is aim your yagi antenna at that flying dot and wait for packets to start decoding. Now is a good time to start sending your beacon until you get a reply back with my location. It's like shooting fish in a barrel.

During the day time, it is much harder to find the space station in the sky with the sun shining in your eyes. I use a computer program called Gpredict. It is an open source real time satellite tracking program. Gpredict will give you a grid on the screen of where the space station is in real time. You will have to point your yagi antenna in that direction, with a 22 degree incline, is a good place to start. You will need to adjust up and down to find the sweet spot. Just like before, once the packets start decoding it is a great time to start trying to get to the space station's Digipeater.

Here are the settings you need to program a Kenwood TH-72A.

- Menu 300 – Call Sign = N8RSH-7 (Use your own call sign, SSID 7 is used for a hand held)
- Menu 3C0 - Symbol = you pick, I went with a Kenwood logo
- Menu 3H0 – Other Path Type
- Menu 3H1 - = ARISS,WIDE2-1
- Menu 310 - A Band (puts TNC on A channel)
- Menu 311 – 1200bps Data speed
- Menu 3D0 – Auto TX beacon
- Menu 3D1 – 1 min Interval
- Menu 380 – Comment > Position Comment (DON'T USE EMERGENCY)
- Menu 201 - Battery saver = off
- Menu 3K0 – Digipeat = off

Turn the GPS on, F – 1 till you see iGPS and then wait till it starts blinking (satellite fix) or set

- Menu 360 – My Position 1
- Menu 362 – Latitude entry
- Menu 363 – Longitude entry

Set our A channel to 145.825 Mhz, and turn the B channel off with the DUAL button

You will also need the tnc in 'APRS12' mode, click the tnc (2) button till it says 'APRS12' on the screen.

Now the radio should be ready to start sending packets. To test this out push the BCON button. You should see 'BCON' icon on the screen and it should transmit a short burst of data. That is all there is to it. I will spam the BCON button until I get a reply, then I will listen for a bit and try another beacon. Remember the station will not be over head very long, so make sure you get one contact in when you can.

The first couple of times I tried making contact with the space station I failed, and it was very frustrating. I was using a j-pole on the roof of my house, which works very well onmi-directional. However, it doesn't work very well getting to the space station. I haven't bought an egg-beater antenna yet, but I have read they work very well for satellite contacts. What does work the best so far has been my hand-held Kenwood TH-D72A on high power with a hand-held 3 element yagi antenna that I use for Fox Hunting. I look forward to seeing your call sign show up on the heard stations list.



73 till next time, N8RSH