

Hi Guys,

Here's my little write up and pictures of my project to make a portable VARA FM station.

The players are:

MS Surface Pro 6 PC 2in1 w/detachable keyboard

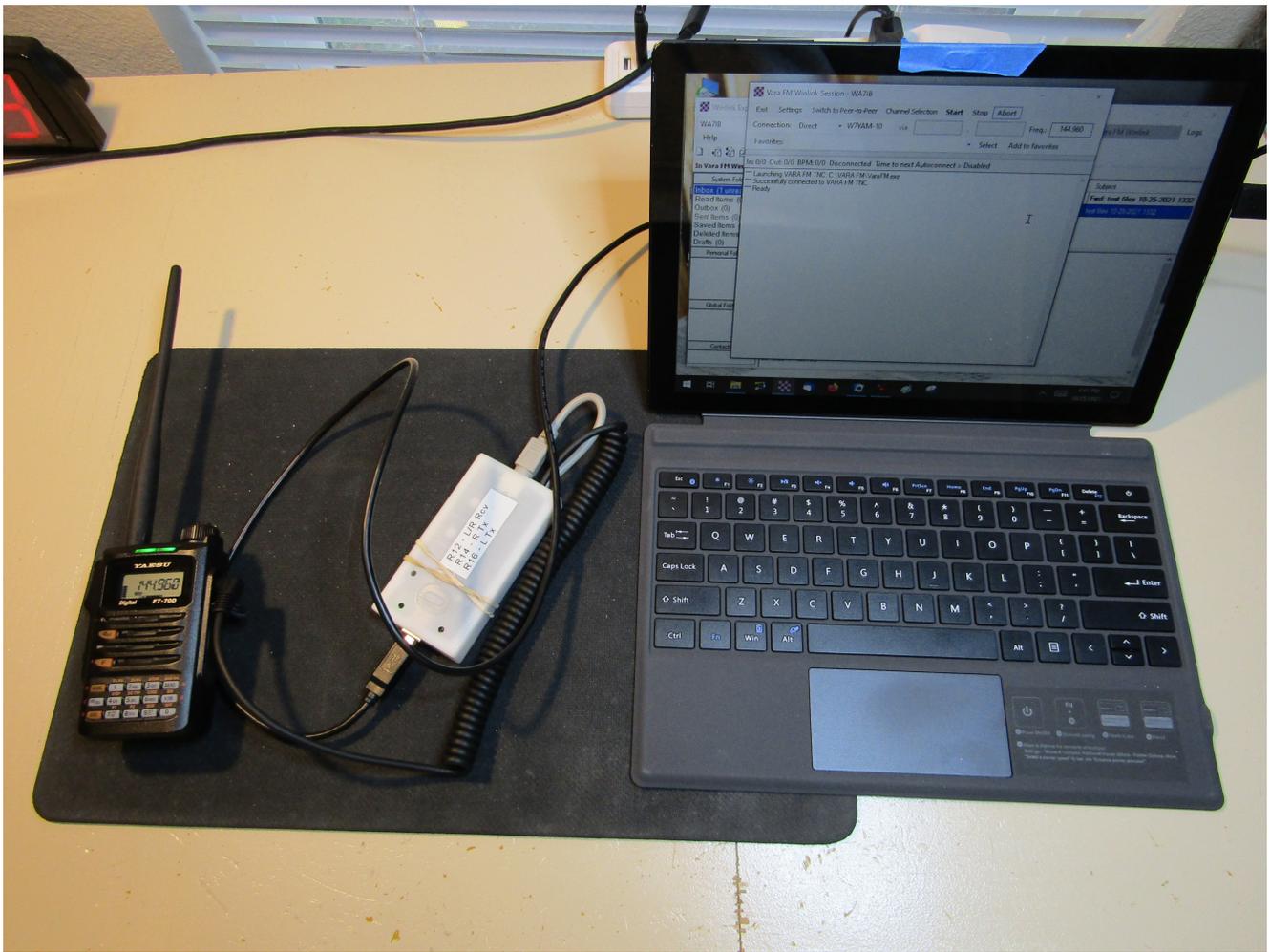
Masters Communications DRA-36 Soundcard

Yaesu FT-70D HT

1/2 of a 6' mini-din6 M-M cable

Coiled cable from cheap eBay Spkr/mic with Yaesu's TRRS plug

Standard A>B USB cable



Supporting Cast:

UGREEN TRRS M-M 6' cable. At first I thought that this plug was no good. When all equipment was connected with the various cables, the DRA indicated that the PTT was active. Troubleshooting eventually revealed that there was nothing wrong while using this cable.



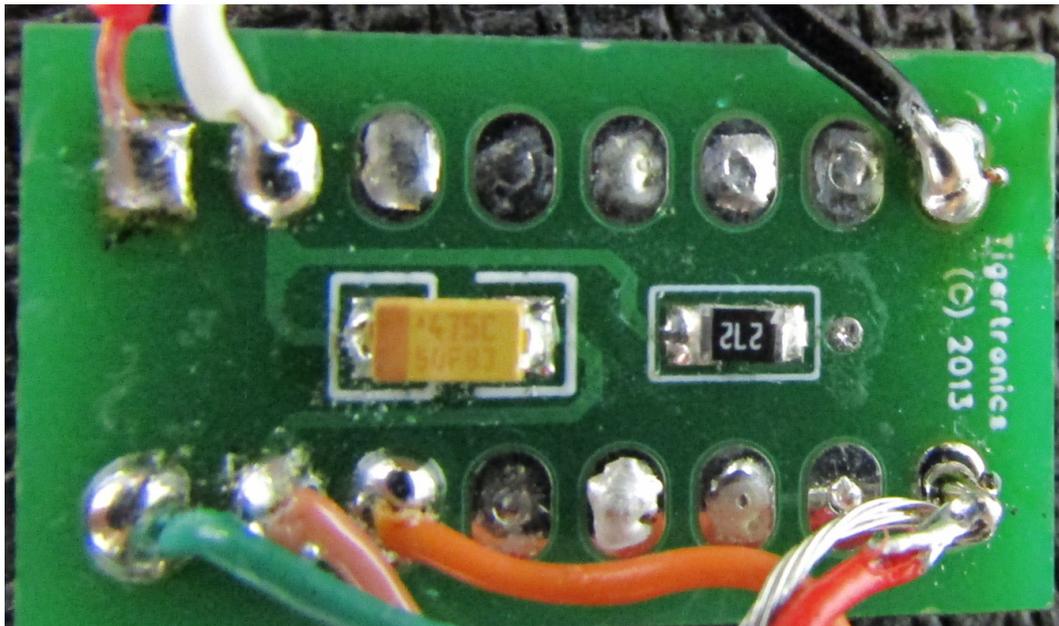
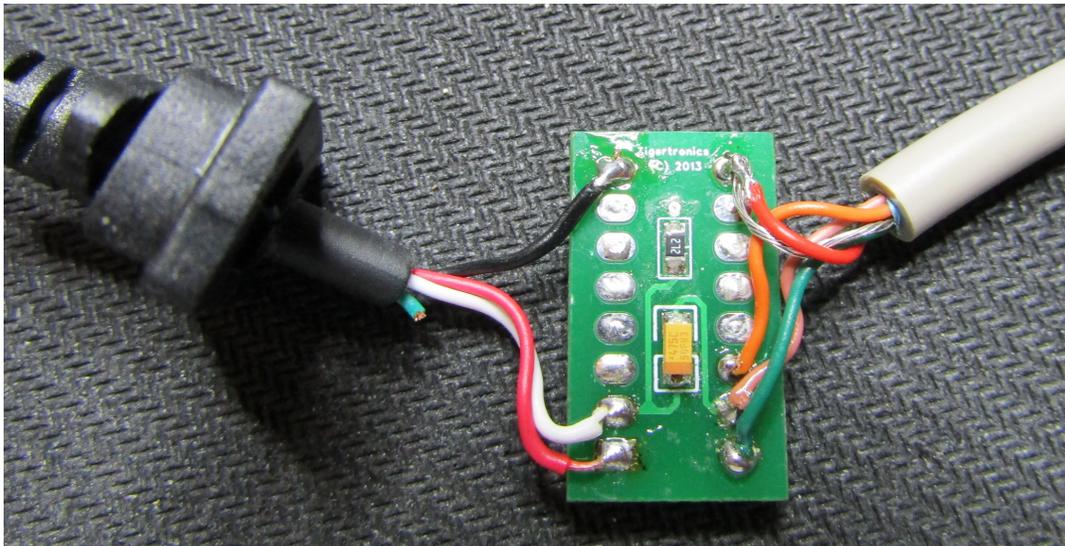
Haokiang 90 Degree Right Angle 3.5mm Male to Male Jack 4 Pole TRRS Extension BTW, the wires on the UGREEN cable are very very small. This cable did not work due to the physical design of the plug. After the sleeve on the TRRS plug, the black covering starts immediately. If you have a TRRS cable sitting around, the cable our FT-70Ds requires another notch after the sleeve that is not as large as the black covering. This allows the plug to go into the radio another 1/8" or so.



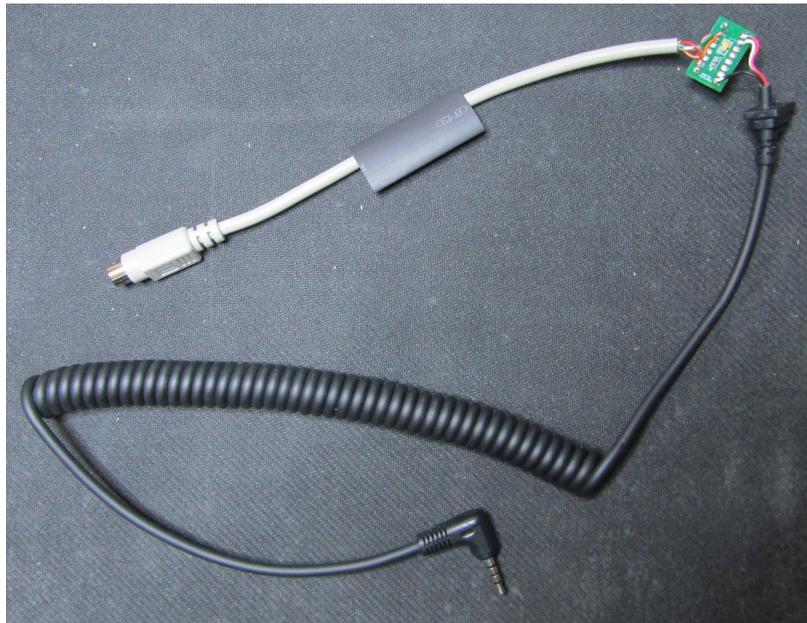
I do not have any early pictures of the adapter board. It is from Tigertronics and supports their Signalink USB (SLUSB) device. This little board is designed to plug directly into the SLUSB and then the user can either make a RJ-45 > radio connector or they can probably purchase a ready made cable from Tigertronics. They have many different models in stock.

I removed the 2 rows of 8 pins from the board. These pins were designed to allow the adapter board to plug into the SLUSB programming module/jumper wire socket. I wanted the board to be as thin as possible because I wanted to place the completed project inside the DRA-36 case.

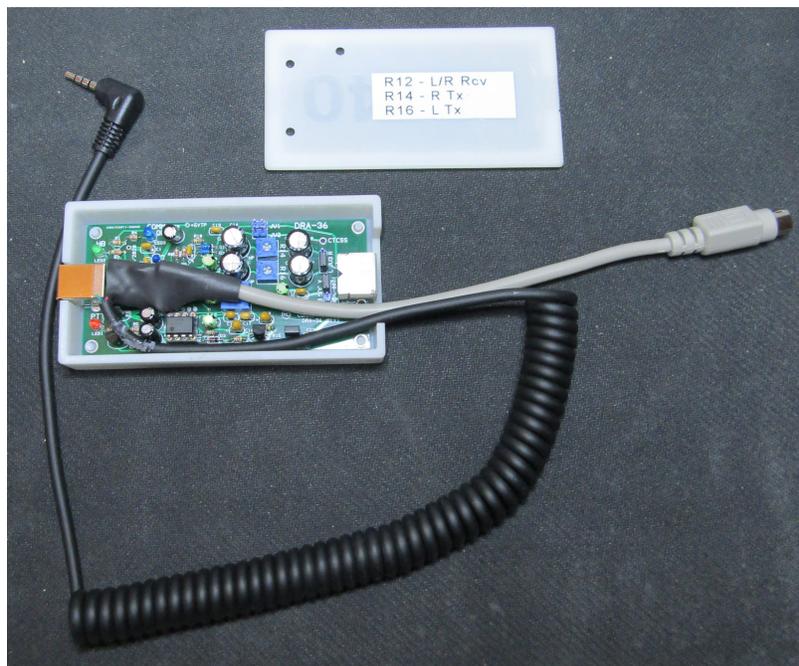
The gray cable is the mini-Din6 going to the soundcard and the black cable is the TRRS going to the HT.



This is what the completed mini-Din6 > TRRS adapter looks like:



This is how it lays inside the DRA-36 case.



All sealed up ready for the field. (The holes in the lid allow easier viewing of the 3 LEDs)



While working on this project, I remembered that I have a case that I am not using designed to hold the Surface Pro PC. The PC slides in on the left side and there are two pockets on the front. The overall case measures right around 8.75" x 12 3/4", not counting the handle nor clips..

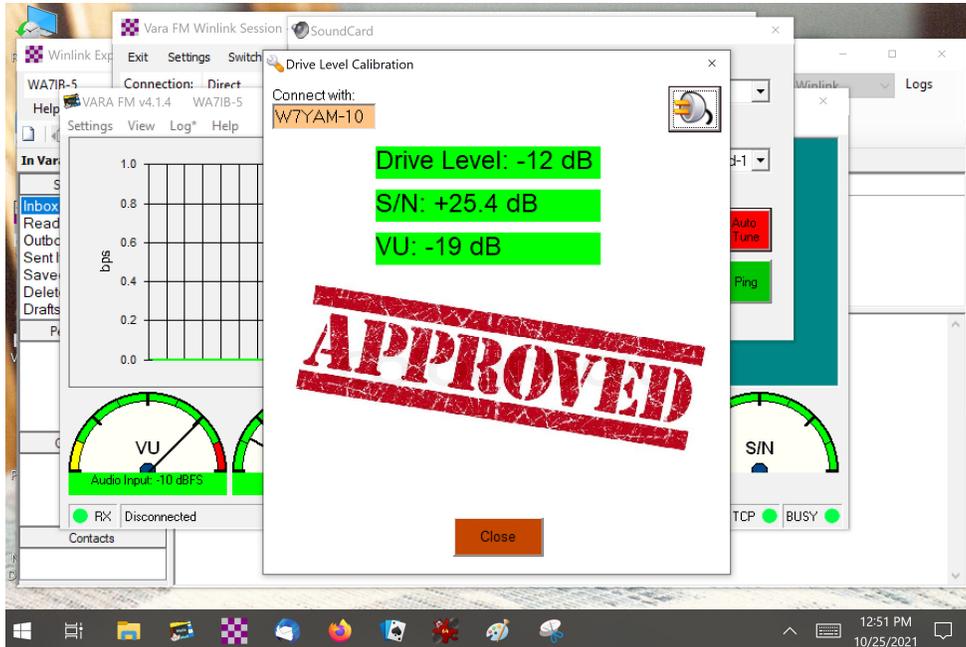


Here is the completed project. All fits nicely inside the case, along with the HT and extra battery. The bulge you see on the 2nd image left front pocket is caused by the HT's belt clip.

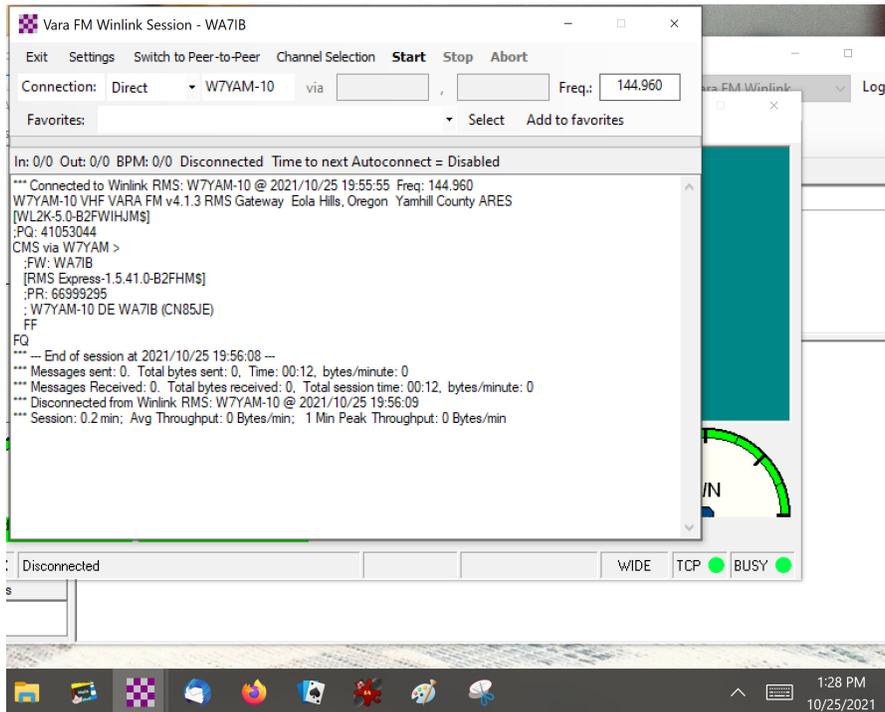


Now on with the results:

Here is the "APPROVED" notice from the local gateway. I did not need to change the soundcard settings that was used to get an acceptable level while Peer to Peer between me and me, maybe 10' between antennas.

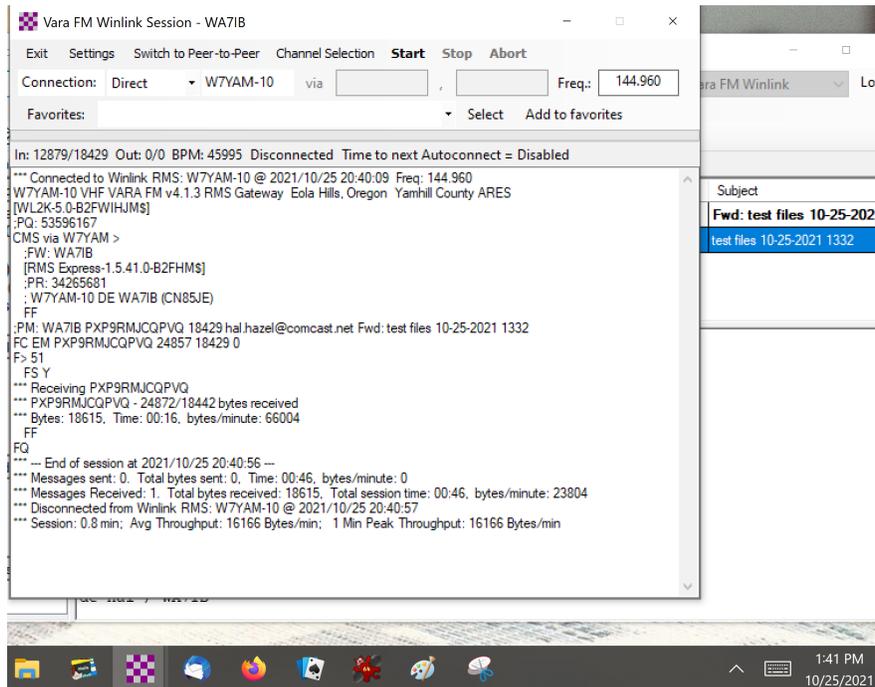


Here is the first connection using this setup.



Here is the 3rd connection. Funny story, for connection #2, I had a 25KB file to send from the portable station. I connected, and after what I thought was just a few seconds, I disconnected. I looked at the status screen and did not read it clearly. For easier testing, I sent the next message from my comcast.net address so the portable station would be receiving instead of sending. I figured that plus/minus a few bytes, the end results should be about the same.

Well, the 3rd connection terminated quickly also. This time I looked at each line of the report very closely and realized that the messages were sent or received on both the 2nd and 3rd connections.

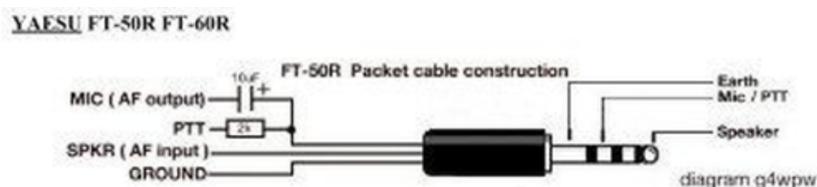


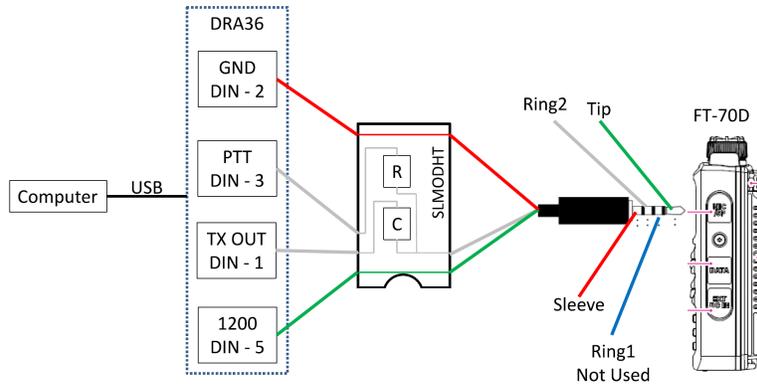
Speeds: As you can see, the paid version of VARA FM is amazingly fast. 28,718 Bytes per minute. For comparison, my test files from a previous project shows 1200 packet comes in at 4100 B per minute and the free version of VARA FM is at 4900 B per minute.

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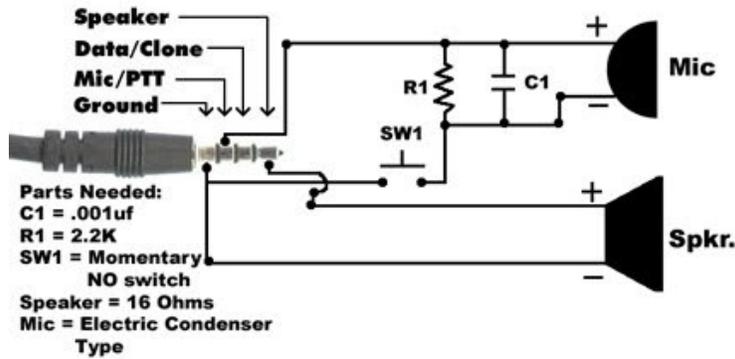
*** --- End of session at 2020/12/24 22:19:59 ---
*** Messages sent: 1, Total bytes sent: 24423, Time: 00:50, bytes/minute: 29030
*** Messages Received: 0, Total bytes received: 0, Total session time: 00:50, bytes/minute: 0
*** Disconnecting
*** Disconnected from Winlink RMS: W7YAM-10 @ 2020/12/24 22:20:00
*** Session: 0.9 min; Avg Throughput: 28718 Bytes/min; 1 Min Peak Throughput: 28718 Bytes/min
  
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Here are some supporting block diagrams and images:





VX-1R/VX-5R/VX-7R Speaker Mic Schematic



UGREEN TRRS Cable from Amazon



Tip: Green
 Ring1: Blue
 Ring2: Bare
 Sleeve: Red

Bottom line, it works. There is one major issue with the current configuration, and that is that there is no way to monitor the receive signal to ensure the freq is clear. A fix is already in development.

I had fun doing this.

Later.

73

de Hal / WA7IB