Digital On A Shoestring
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At some time in your radio life you may desire to communicate even when Band conditions prohibit normal SSB Phone. Recently I could not converse with a fellow ham (N4BVO) in North Carolina even though he was running 300w and I was at 100w. When we switched to **Digital Mode PSK31**, I dropped to 10w, not sure what he did but clean, clear, communication resulted. That experience made me really appreciate the opportunities and effectiveness of Digital.

If you would like to give the digital modes a go and don't want to spend a bunch of bucks on boxes and cables ($100-200) to see if you like these operating modes you can try using the suggested connections outlined below, they work and work well for me. What we are suggesting is not new or earth shattering but perhaps a few readers are unaware of how little it actually takes to accomplish Digital Communications.

Since the software on all of the machines go by what noise patterns they make and by what they hear we can simply use the audio capabilities of most modern laptops to handle the task at hand providing that they have a sound card with reasonable control of the input (Mic Jack) and output (Headphone Jack) or speakers.

What we are trying to accomplish here is to have the Computer Software hear the signals (mic Jack), decipher them and then display characters on your screen that you can read. When it comes time for you to answer we need to reverse the process and put that screeching noise back over the air through the (Headphone Jack) or speakers. On the radio end it's all done on SSB/USB anyway so we can use the HF rig's Mic for input.

Here are the things that you need to get started with this **DOAS**.

1. **Computer** with a decent/working sound card.
   - Mic Jack
   - Headphone Jack to external speaker or good internal speakers
   - Volume Control

2. **HF transceiver** that has: (Fig. 3)
   - **VOX option** (read up on how to use it)
   - Headphone Jack

3. 3.5mm **"Y" stereo** connect/splitter cable configured M/F/F. (Fig. 1)
4. **Headphone** (Optional)
5. 3.5mm **Stereo M/M** cable.

3.5 mm "Y" M/F/F

Fig. 1

6. **Software** (free) like **Fldigi** (it seems to be one of the better free offerings) If you have an Android machine you also have options for some Digital PSK software. Check Amazon or Google some packages are also free. (Fig. 2)
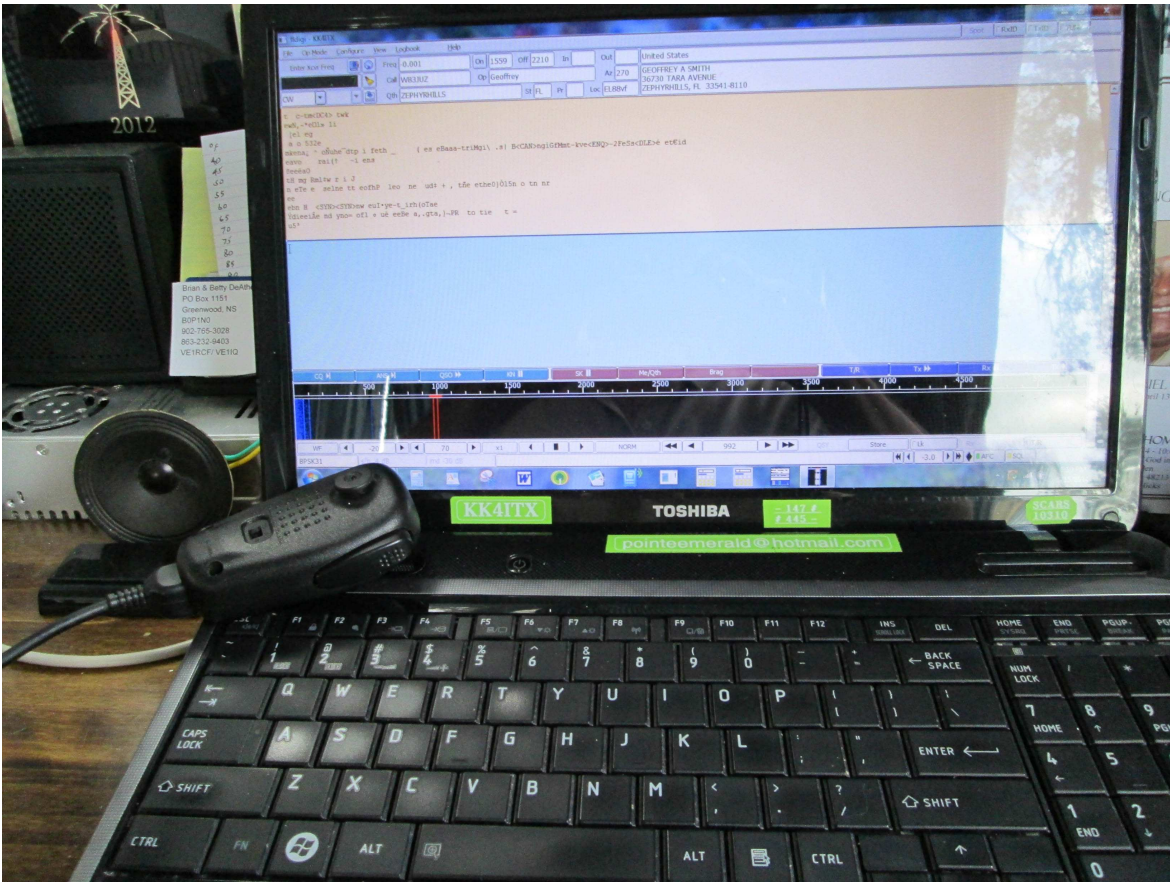

Fig. 2

Software

After loading up your software and checking it out, and it will take a while to become familiar with its operation, so make sure you download and (*shudder*) read the help files. The software is really key here so you will have to learn how to use it but don't worry, your first Digital QSO will probably be about like it was when you made your first Phone QSO! Newbies welcome.

Connections

Plug the "Y" male into your HF rig's Headphone Jack, the M/M 3.5mm into one female side and the other end into the Mic input on the Computer. The other Female connection of the "Y" can be used for your headphones used to monitor the signals usually for the initial setup only.

When operating, your HF Microphone will be laying in close proximity (See Fig. 2) to the speaker output of your Computer, maybe even on it. I sometimes use a small 3" external speaker to lay the Mic in and it is of course plugged into the Computer's headphone jack. This is better, but not necessary.

Fig. 3

Adjustments

Transceiver

The objectives here are to make the "noise" heard by each piece of equipment <u>pleasant</u>. That is, <u>**Do Not Overdrive**</u> the inputs or outputs. We use the headphone at the "Y" connector to **listen**

to the incoming "noise" and adjust the **<u>AF Gain</u>** on the <u>HF Radio</u> to a <u>comfortable level</u>. If it's too loud you will have garbage on the Computer screen, too low and there will be not much there as you may be missing data.

Cut the power down on your **TX** to about <u>5W-10W</u>. That will get you around the world like I have, working Europe and much of the U.S. with only 5W.

Computer

Your Computer sound system should have a <u>volume control</u> in the lower RH corner of your screen somewhere, find it and use the slide bar to bring it to **30-50%**. Without the HF rig engaged, try to send a message with the software. You will hear the sounds of the Mode that you have selected coming from the speakers and you will have to judge if the result is too loud or too soft. If it's comfortable for you it will probably work just fine. When you're ready, place the HF Rig's Mic on or near a Computer speaker, activate the VOX option and see if it keys up the radio. It is of course possible to have the VOX too sensitive. On my FT-450D there are VOX delay and a GAIN settings and a method of turning the VOX feature on and off.

After some experimenting you will become quite comfortable with this DOAS method and just may become a convert.

Operating Digital is not everybody's cup of tea but like so many parts of being a Ham, you gotta at least try it, I did and found the mode quite interesting and it should prove to be quite useful during an emergency. Try what we have outlined here, make it work and then even if you don't use it often you'll at least know how to get it done should the need arise.

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