

WSJT-X FT8 Operation by W2HUV

You will need to install two additional applications on your PC in order to operate in the FT8 mode:

- 1) Virtual Audio Cable (VAC) v4.15
- 2) DXLab Commander

DXLab Commander is required because the default CAT program used by WSJT-X, Hamlib, appears to be unable to cope with the latency of remote operation. You constantly get Hamlib errors. CAT control with the DXLab Commander, on the other hand, is flawless.

Installation of VAC v4.15:

- 1) Follow the link below, select “Self-Support” and then “Buy now”. Downgrade from v4.60 to v4.15 when you are given the opportunity. This is necessary because it has been reported that the use v4.60 results in distortion.

<http://secure.avangate.com/order/product.php?PRODS=1943611&QTY=1&LANG=en>

- 2) Open the “Virtual Audio Cable Control Panel”.
- 3) Under “Driver parameters”, select “Cables” 2 and click the “Set” button.

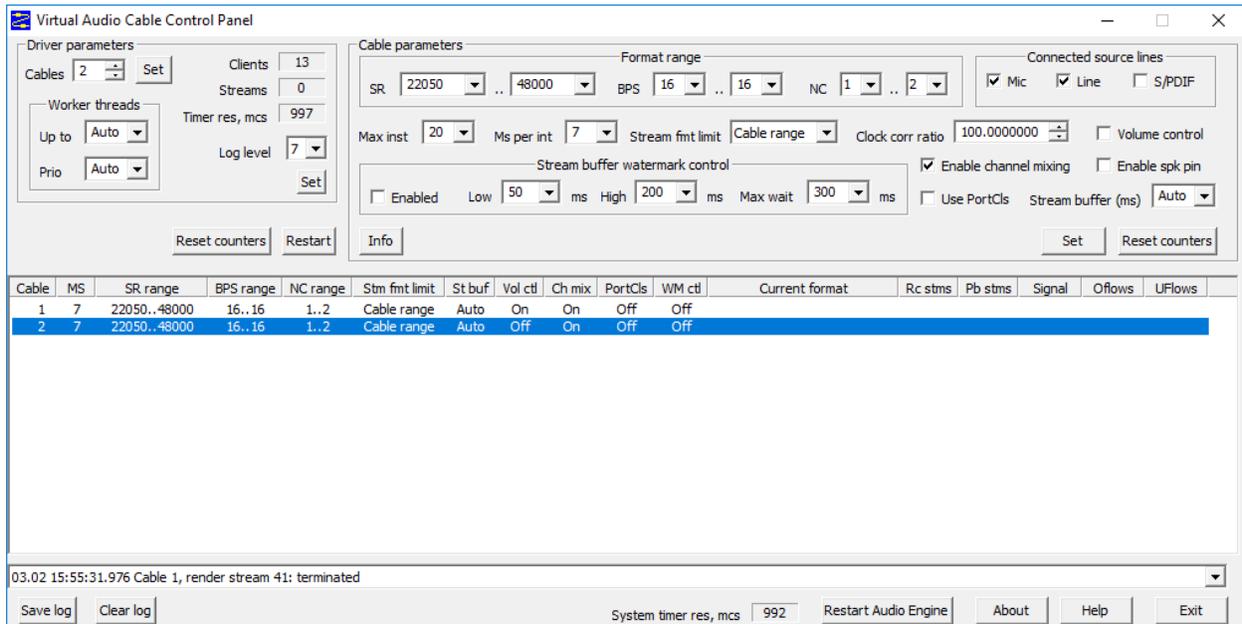
The window should appear as follows with Cable 1 selected:

The screenshot shows the Virtual Audio Cable Control Panel window. The 'Driver parameters' section is set to 'Cables: 2'. The 'Cable parameters' section shows 'Format range' with SR: 22050, BPS: 16, and NC: 1..2. The 'Stream buffer watermark control' section is set to 'Enabled' with a low watermark of 50 ms and a high watermark of 200 ms. The 'Connected source lines' section has 'Line' checked. The status bar at the bottom shows '09.02 17:09:18.352 Cable 2, render stream 147: terminated'.

Cable	MS	SR range	BPS range	NC range	Stm fmt limit	St buf	Vol ctl	Ch mix	PortCls	WM ctl	Current format	Rc stms	Pb stms	Signal	Oflows	UFlows
1	7	22050..48000	16..16	1..2	Cable range	Auto	Off	On	Off	Off	ExtPCM/48000/16/2(3)	1	1			
2	7	22050..48000	16..16	1..2	Cable range	Auto	Off	On	Off	Off	ExtPCM/48000/16/2(3)	1	0			5

4) Select Cable 2, check the “Mic” box under “Connected source lines” and click the “Set” button below.

The window should appear as follows with Cable 2 selected:



5) Open RCForb client and select the “Audio” tab. Set SPKR to “Line 1 (Virtual Audio Cable)” and MIC to “Line 2 (Virtual Audio Cable)”.

6) Select “Open Playback devices” after right clicking speaker at end of Windows task bar. Select “Sound control panel” near the top of the right column on the screen that appears. Click “Line 1 Virtual Audio Cable”, click “Set Default” and click “OK”.

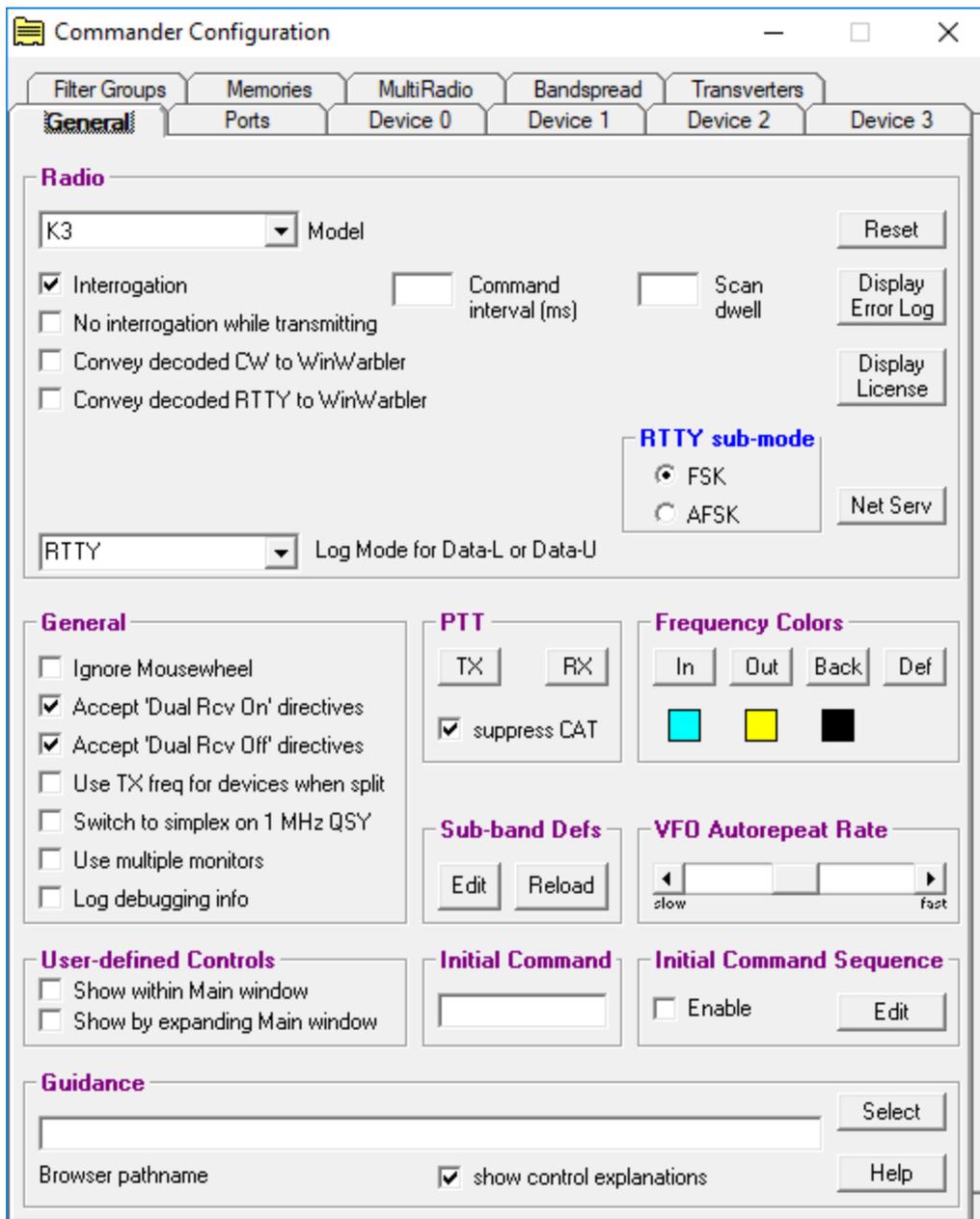
That completes installation of the virtual audio cables.

Installation of DXLab Commander:

1) Follow the instructions contained in <http://www.dxlabsuite.com/dxlabwiki/InstallLauncher> to install the “DXLab Launcher” and “DXLab Commander”.

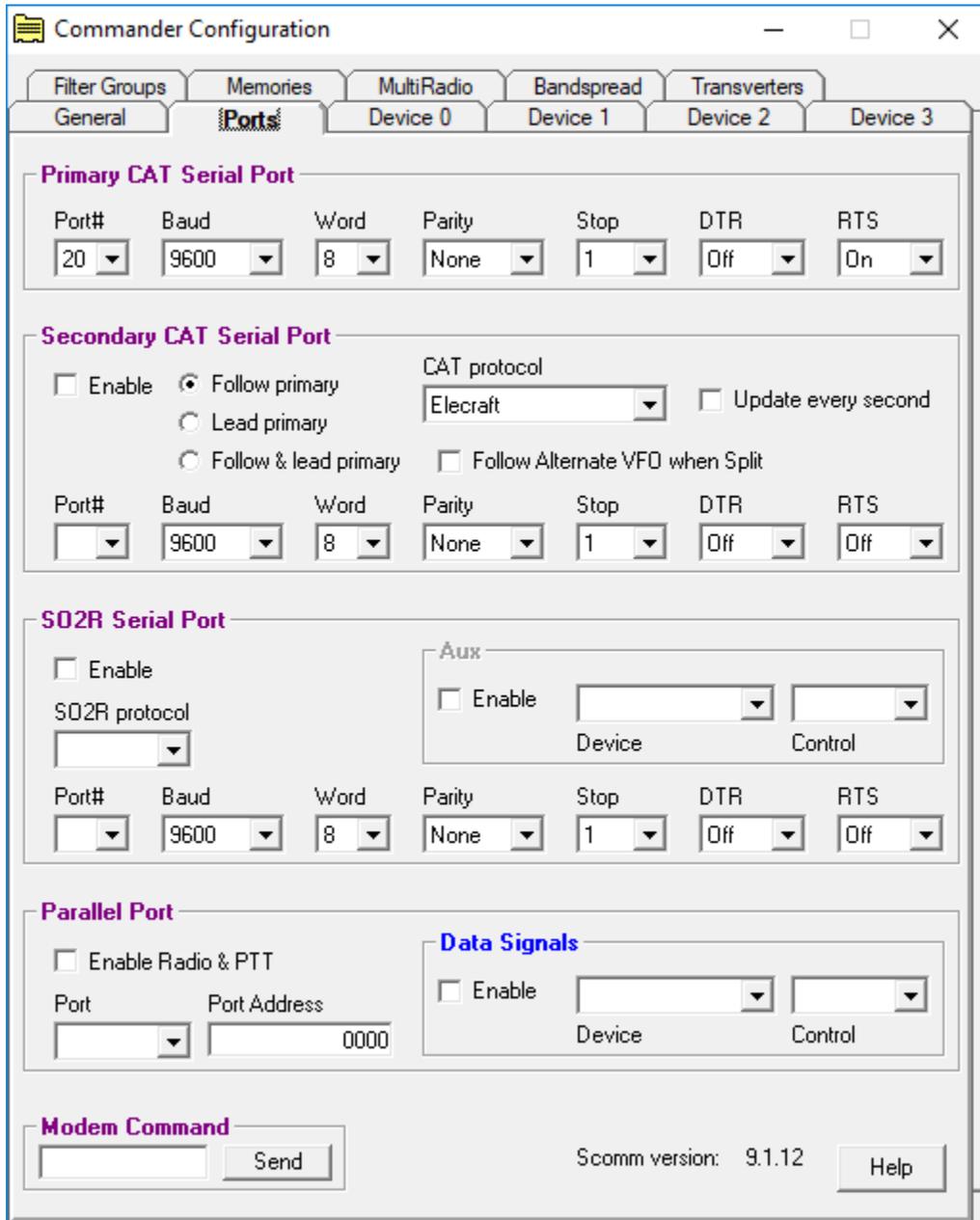
2) Open Commander and click the “Config” button at the bottom.

3) Configure the “Radio” and “PTT” settings on the “General” tab as shown on the next page.

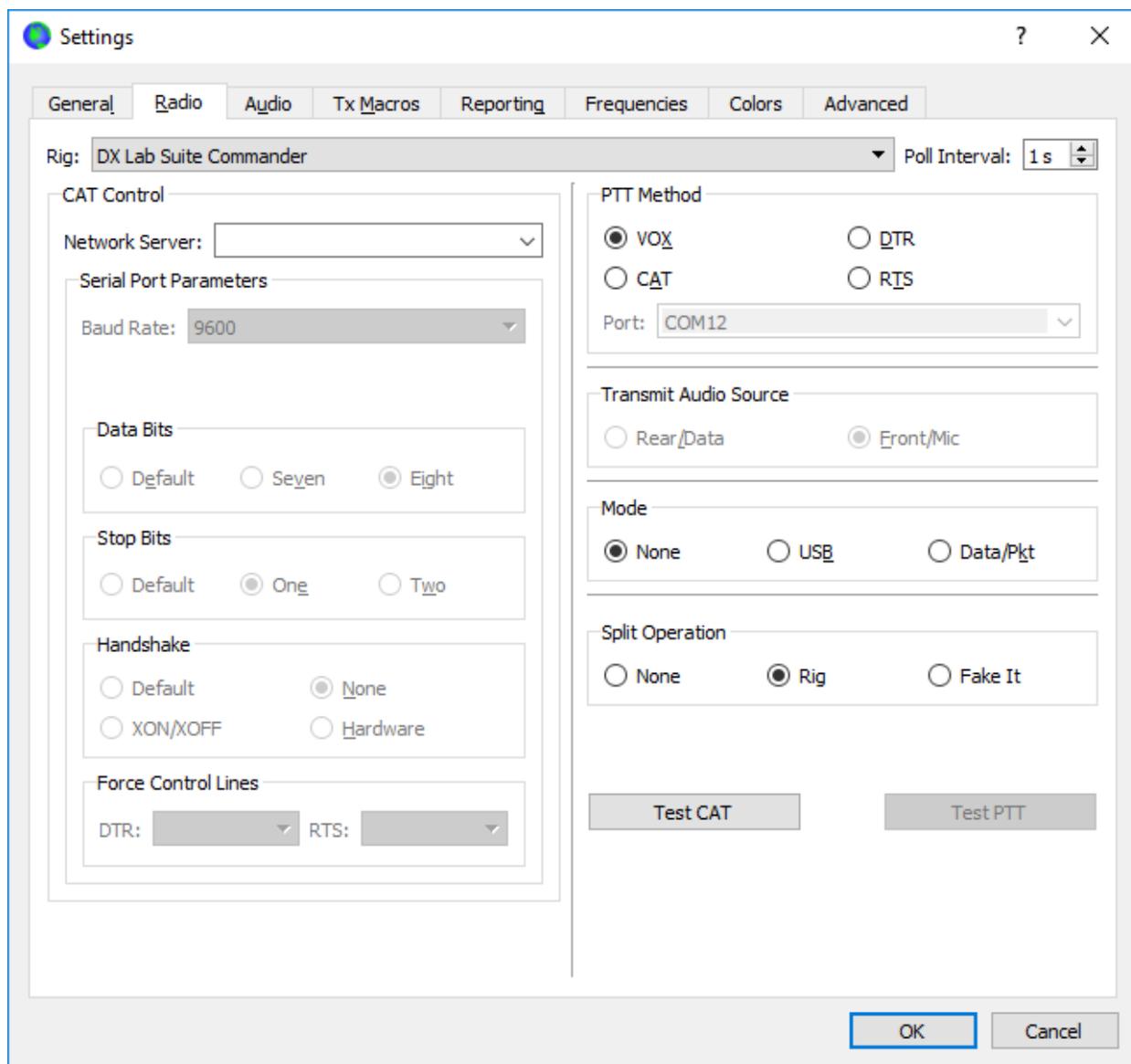


- 4) Open RCForb client and connect to the remote radio.
- 5) Select the “Virtual Devices” tab and look at the “Virtual K3” option. If the option is greyed out, it will be necessary to reinstall the client, this time, checking the “Virtual Serial Port Support” option.
- 6) Turn on the “Virtual K3” option and select a COM port. COM20 is suggested because it is easy to remember and out of the way

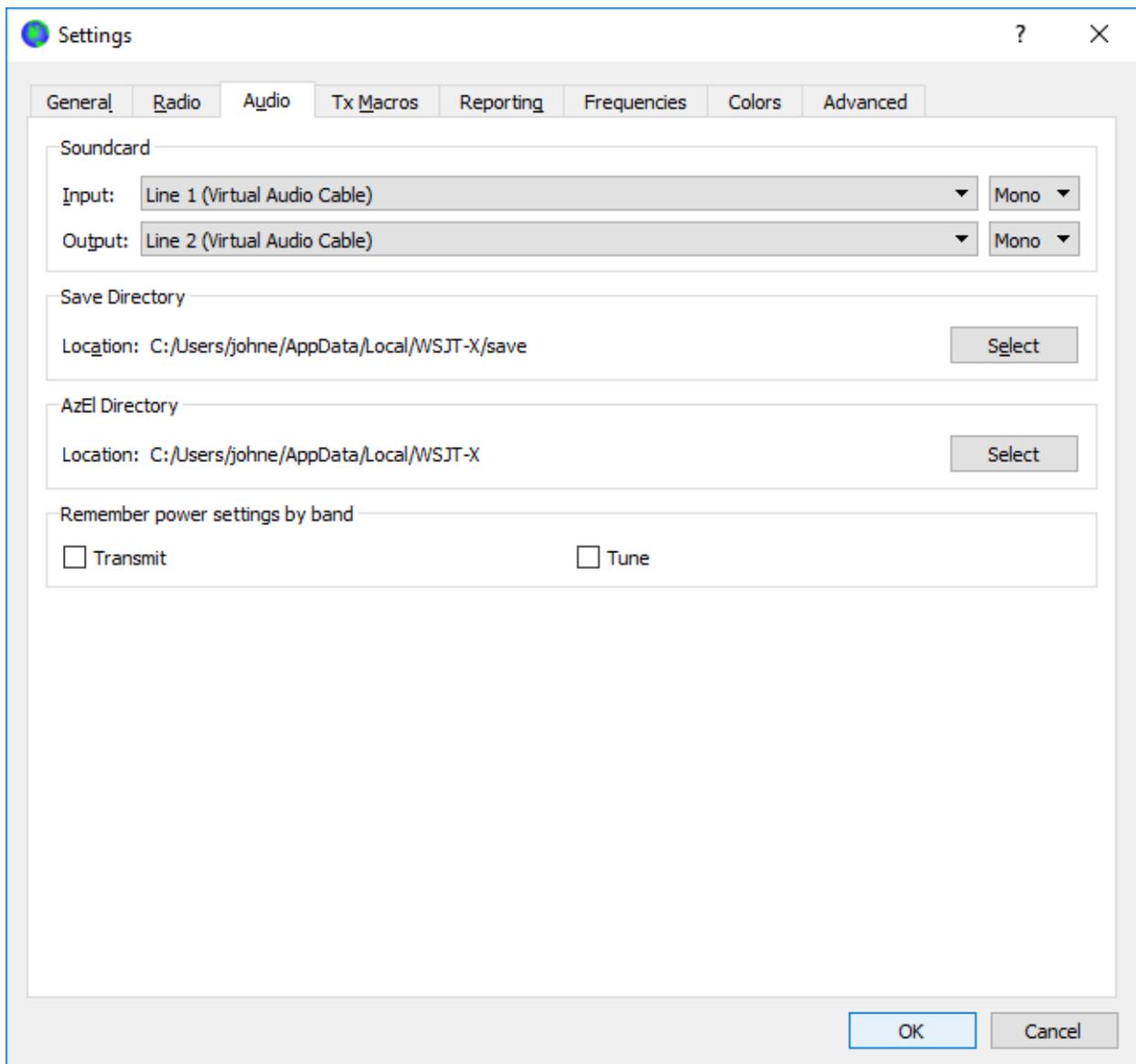
7) Configure the “Primary CAT Serial Port” on the Commander “Config, Ports” tab as shown below. COM20 is the “Virtual K3” created by the RCForb client. The client must be running and connected to a remote to see the port. Don’t worry about the Secondary CAT Serial Port.



8) Open WSJT-X and configure the “Radio” tab settings as shown below:



9) Configure the “Audio” tab settings as shown below:



That completes installation of DXLab Commander.

Remote WSJT-X FT8 Operation:

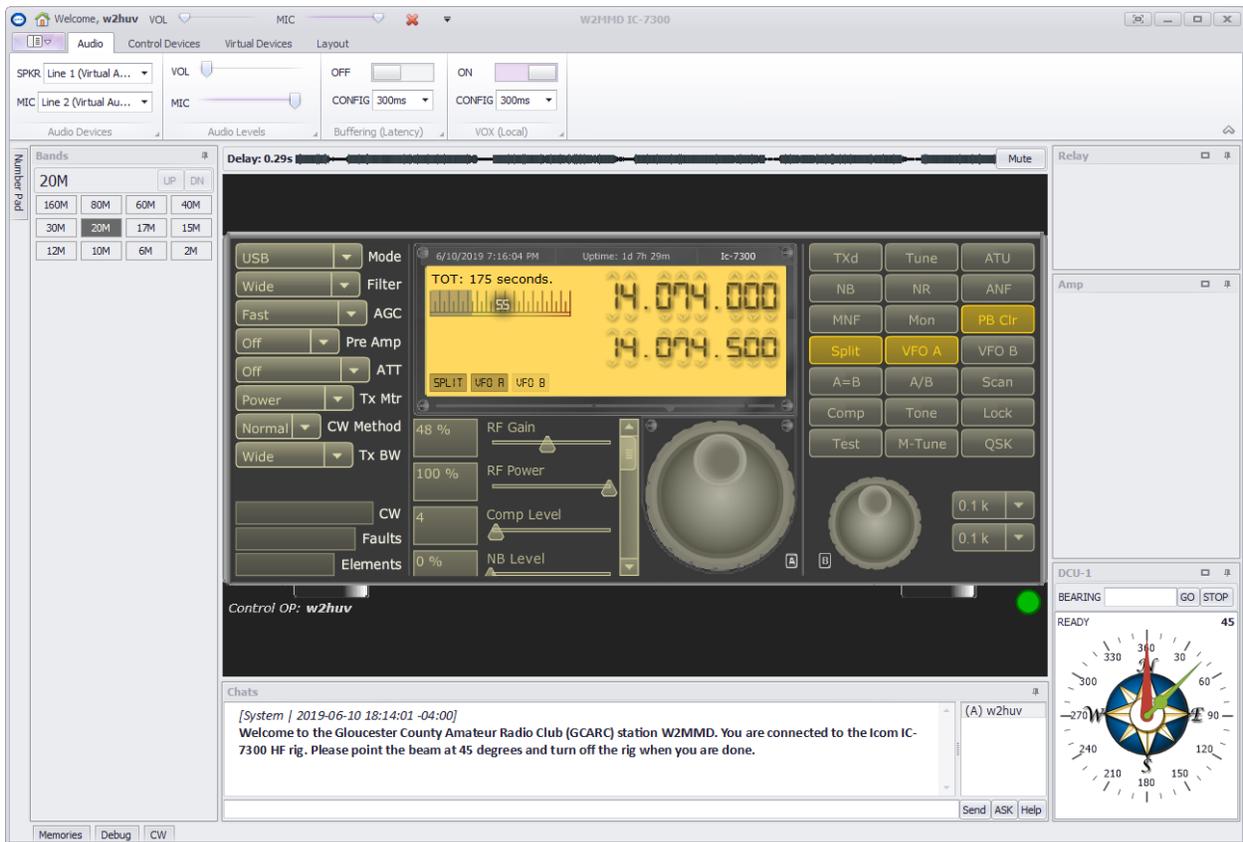
It is assumed that you have already completed installation of two Virtual Audio Cables and Commander as described in the preceding sections.

- 1) Open the RCForb client, connect to the remote, turn on the radio, open Commander and open WSJT-X.
- 2) Click the down arrow in the band selector to the left of the frequency display on the WSJT-X screen and select 20m. The VFO A frequency indication should be 14.074 on the WSJT-X screen, Commander and the radio.
- 3) Verify that the Line 1 and Line 2 virtual audio cables are still selected on the client and WSJT-X "Audio" tabs.
- 4) The following radio settings needed for WSJT-X operation: Mode, USB; Filter, Wide; AGC, Fast; Pre Amp, Off; ATT, Off; Tx BW, Wide; RF Gain, 100%*; RF Power, 100%*; Comp Level, NB Level, and NR level, minimum.

* Adjust the RF Gain and RF Power as desired.

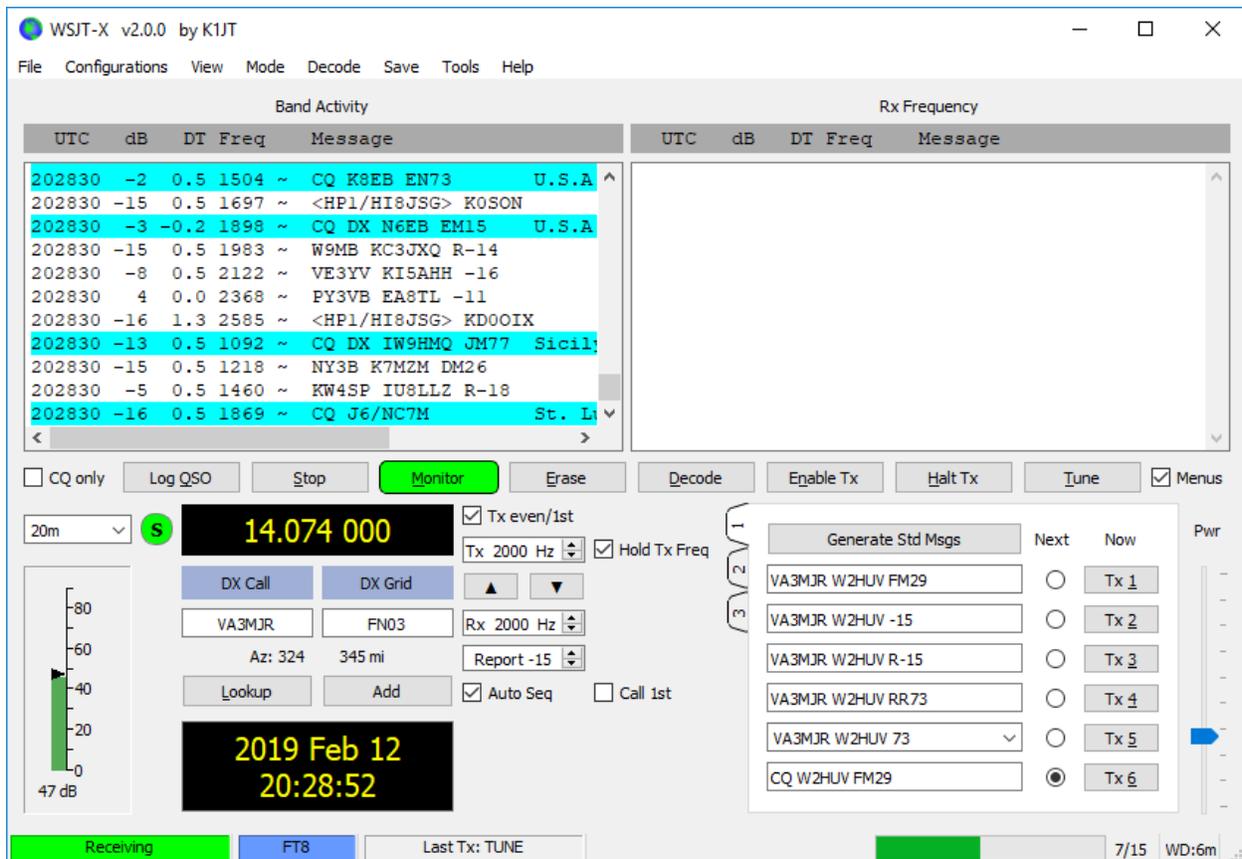
- 5) Observe the radio to see how it is affected by CAT operation. Try clicking the down arrow in the band selector to the left of the frequency display on the WSJT-X screen and selecting another band. The RX and TX frequencies will change automatically. The VFO B frequency will be changed as necessary to keep the WSJT-X TX tones well within the 2.7 KHz bandwidth of a typical transmitter.

6) Return the band selected in WSJT-X to 20m. See the screen shot below. Note that “Split” and “VFO B” are lit and that VFO B is set 500 Hz above VFO A. The TX audio frequency is set at 2000 Hz in this example.



7) Go to the WSJT-X screen. Refer to the screen shot below.

Move the client “VOL” control all the way to the left. The green vertical bar to the left on the WSJT-X screen should disappear. Increase “VOL” until the top of the vertical bar is at about 40. Now decrease the radio “RF Gain” until the signal level when the “Decode” button is lit is about 30. It takes practice to get the knack of this.



Tip: Set Bins/Pixel on the Wide Graph at 3 to extend the range to 4000Hz. This will allow you to view all stations on the band except possibly when operating in one of the contest modes.

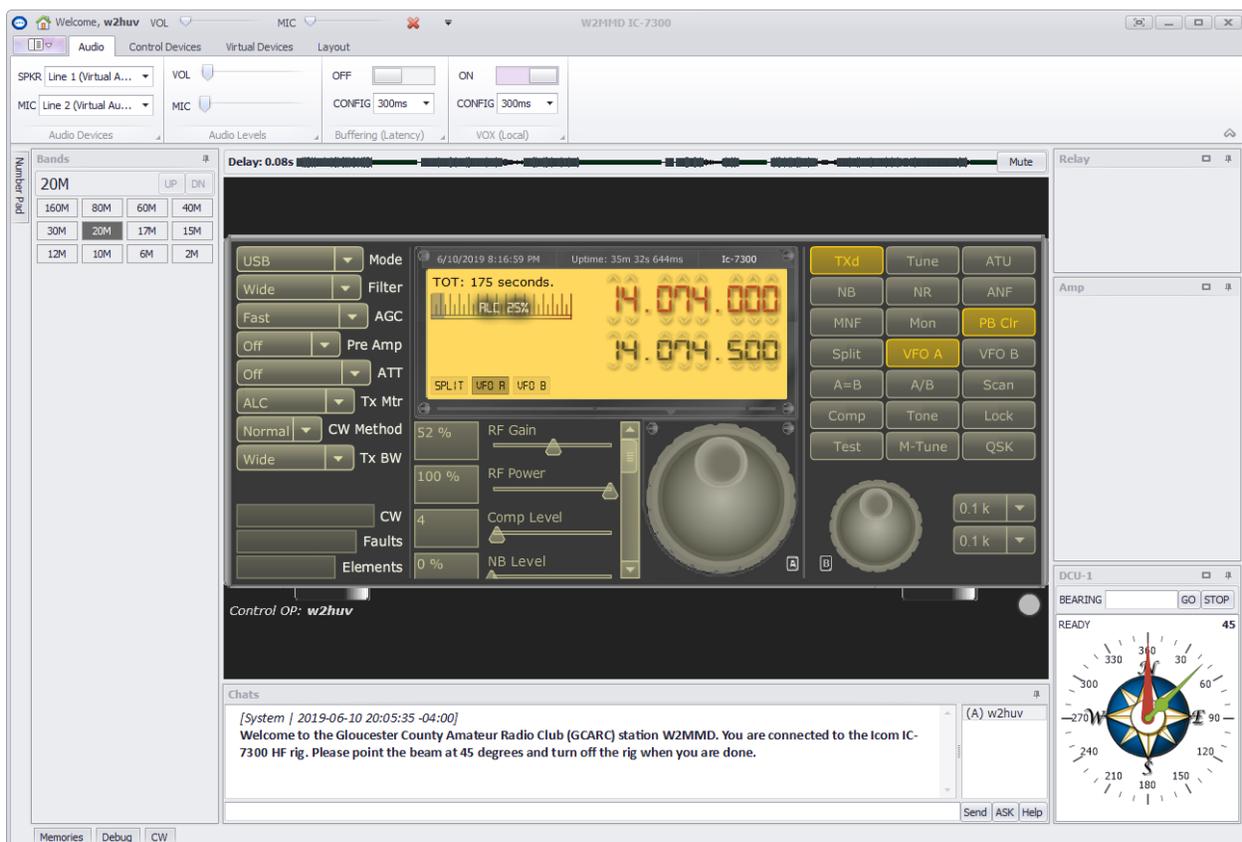
8) Move the client “MIC” control all the way to the left.

9) Turn on “VOX Local” on the client “Audio” tab. Jot down the current settings if you are using VOX during phone operation. Drag both controls to the left. These settings provide the fastest response.

10) Go to the WSJT-X screen. Refer to the above screen shot.

Locate the vertical “Pwr” slider to the right and drag it to the bottom. Click the “Tune” button. Slowly drag the “Pwr” slider up until the TXd button on the radio lights. The radio should appear as in the next screen shot. Click the “Tune” button again to stop tuning.

Ideally, the ALC reading should be in the range 30-50%, but this is very difficult to achieve with tones. Note that the ALC reading is 25% in the screen shot. It could just as well be 0% or 95%. The ALC reading increases with time. If you check the power at these settings, you will find that it is about 100 watts. You may increase power (and ALC value) by increasing the “Pwr” setting or the client “MIC” setting. I have seen it as high as 115 watts. However, you probably will start getting FA.ULT messages. Use the current settings to avoid that.



Congratulations! You are ready to operate in the FT8 mode.

The normal startup sequence before you start operating WSJT-X is as follows: Open RCForb client, connect to remote radio, open Commander and open WSJT-X. It won't hurt to leave WSJT-X and Commander running when you switch to another mode.

Please address all questions, comments and issues to w2huv@arri.net.