

Getting Started with FT8

Written by *Timothy Adams, N6DLC* – eMail: tim@wnbnet.net on Jan 1, 2021

FT8 is an Amateur Radio digital mode that has become very popular in the last few years. It is primarily used on the HF bands although it can be used on any band where data transmission is allowed.

To use FT8 you need four things:

1. HF transceiver with SSB capability
2. Some kind of sound card audio interface. Modern radios such as the IC-7300 or FT991a have this built in via a USB connection, along with a radio control interface. For older radios there are devices like the Tigertronics Signalink USB. ([link here](#))
3. A computer capable of running the **FT8** software along with “Time Synchronization” ([link here](#)) software
4. The popular (and free) WSJT-X **FT8** software ([link here](#))

Step number one:

Download and install the time synchronization software. ([link here](#))

This is important due to the way that FT8 processes messages. With **FT8**, you are restricted to very small messages, with a limit of 13 characters per message. Each message of up to 13 characters takes 13 seconds to send. There are 4 slots per minute, and you transmit for one 15 second block, then listen for replies for 15 seconds, and transmit again for 15 seconds. Due to this, timing is very important. Errors of one second or more begin to degrade signal to noise ratio and your results will suffer. This software constantly adjusts your PC clock.

Step number two:

Download and install the digital mode application “WSJT-X” ([link here](#)).

This program does all the work needed to operate your radio in several different digital modes, but we will be focusing primarily on FT8 for now.

Step number three:

Start up the WSJT-X program.

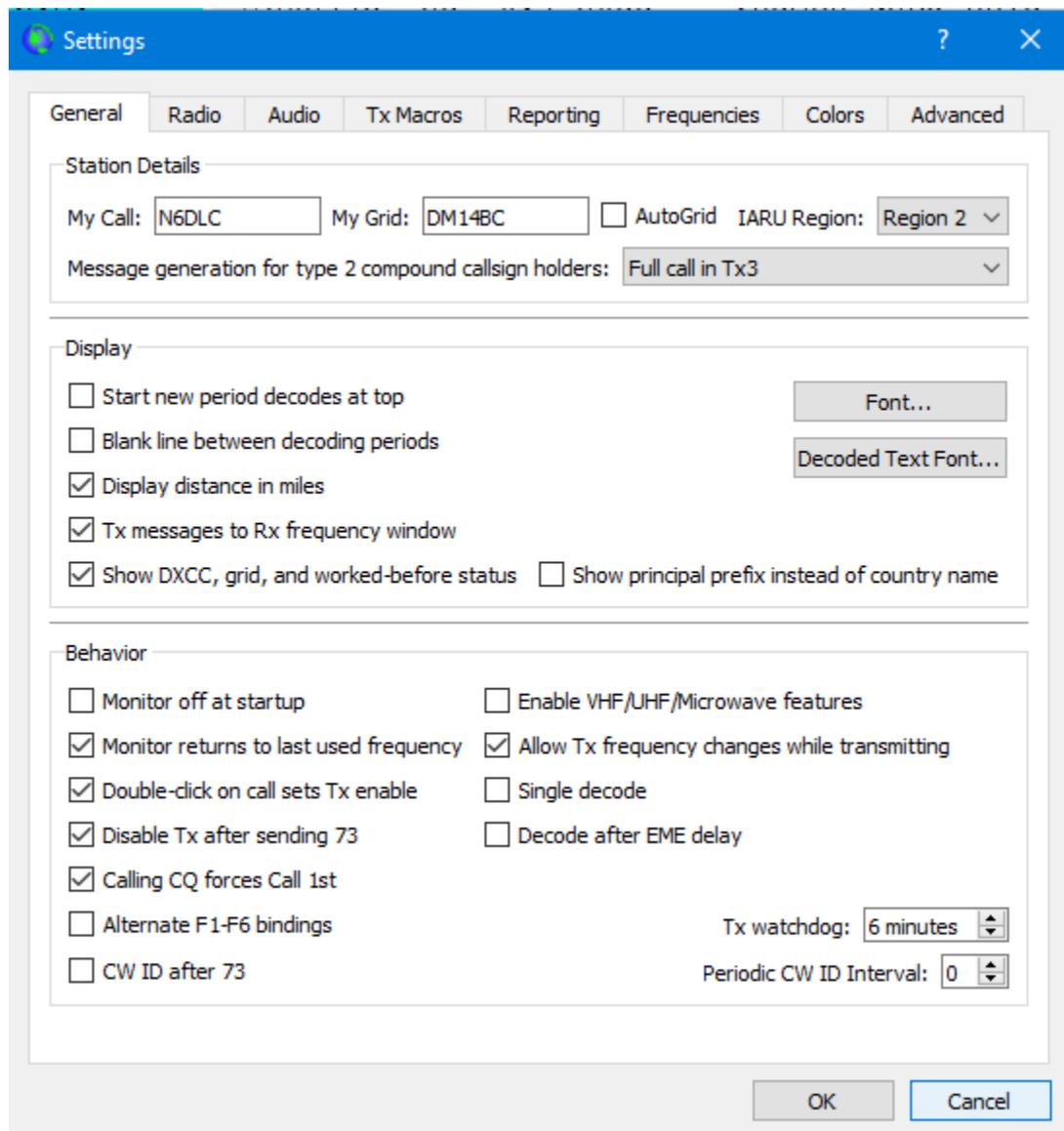
Now we need to setup a few configuration parameters. These will vary on each computer depending on your setup. You will need to know:

1. What serial port is used to send commands to your radio (such as “COM2”).
2. What that port baud rate is set to on your radio.
3. The name of the audio device to send and receive audio from your radio. This will look something like “Microphone (2-USB Audio Codec)” used for audio from the radio to the computer or “Speakers (2-USB Audio Codec)” used to send audio to the radio.

Setting up the WSJT-X settings:

On the program menu, go to “File->Settings”. The settings window will open.

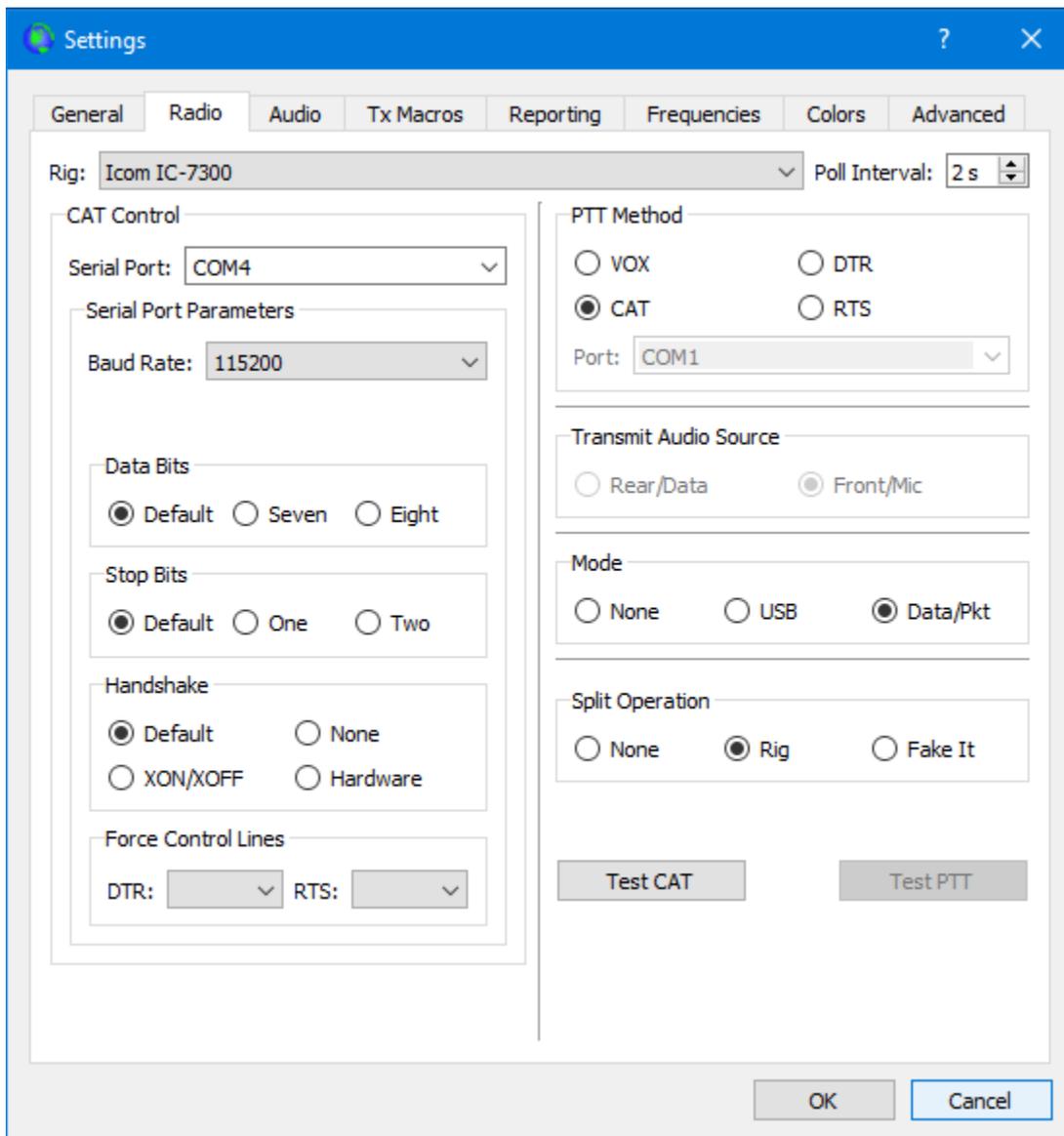
It will look like:



In the “Station Details” box fill in “My Call” with your call sign. Fill in “My Grid” with your grid square (you can find this in your QRZ.com profile if you do not know it). In the USA we are all in IARU Region 2 so use the pulldown menu to set that. Other than that, be sure all the check boxes that are checked above are set.

Next, click on the tab at the top that is labeled “Radio”.

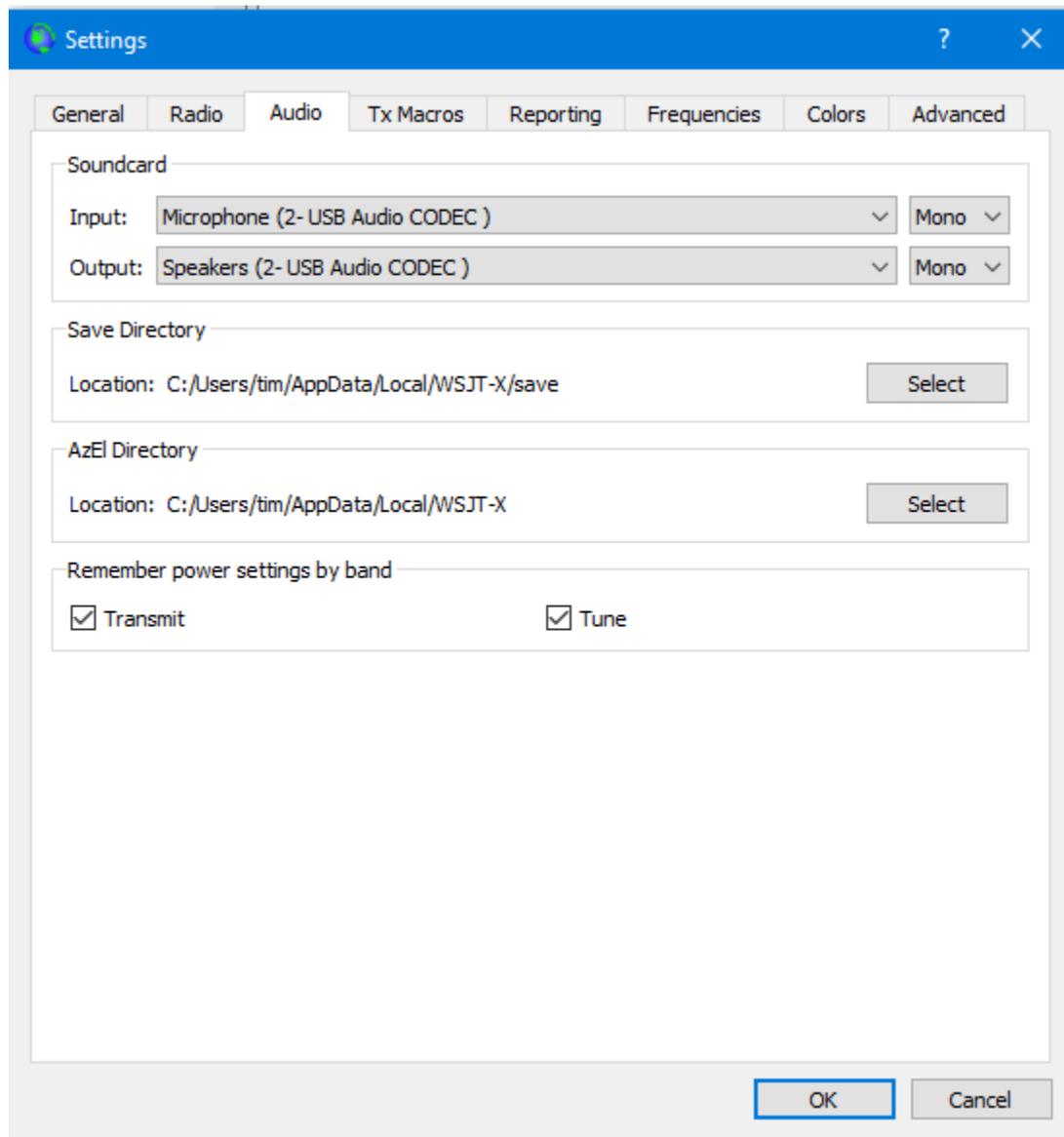
It will now look like:



Set “Rig” to the model of your radio. Here is where you need to know your “Serial Port”. If for some reason you do not know which one it is, pick one. Set the “Baud Rate” to the rate you setup on your radio for CAT commands. For the most part the rest of the options can be set as shown. You can now click on the “Test CAT” button. If it turns green, all is set correctly. If it turns red, you may have the “Serial Port” or the “Baud Rate” options set incorrectly. Check your radio for the baud rate it is set for and if that is correct, try another “Serial Port” until you find the one that works.

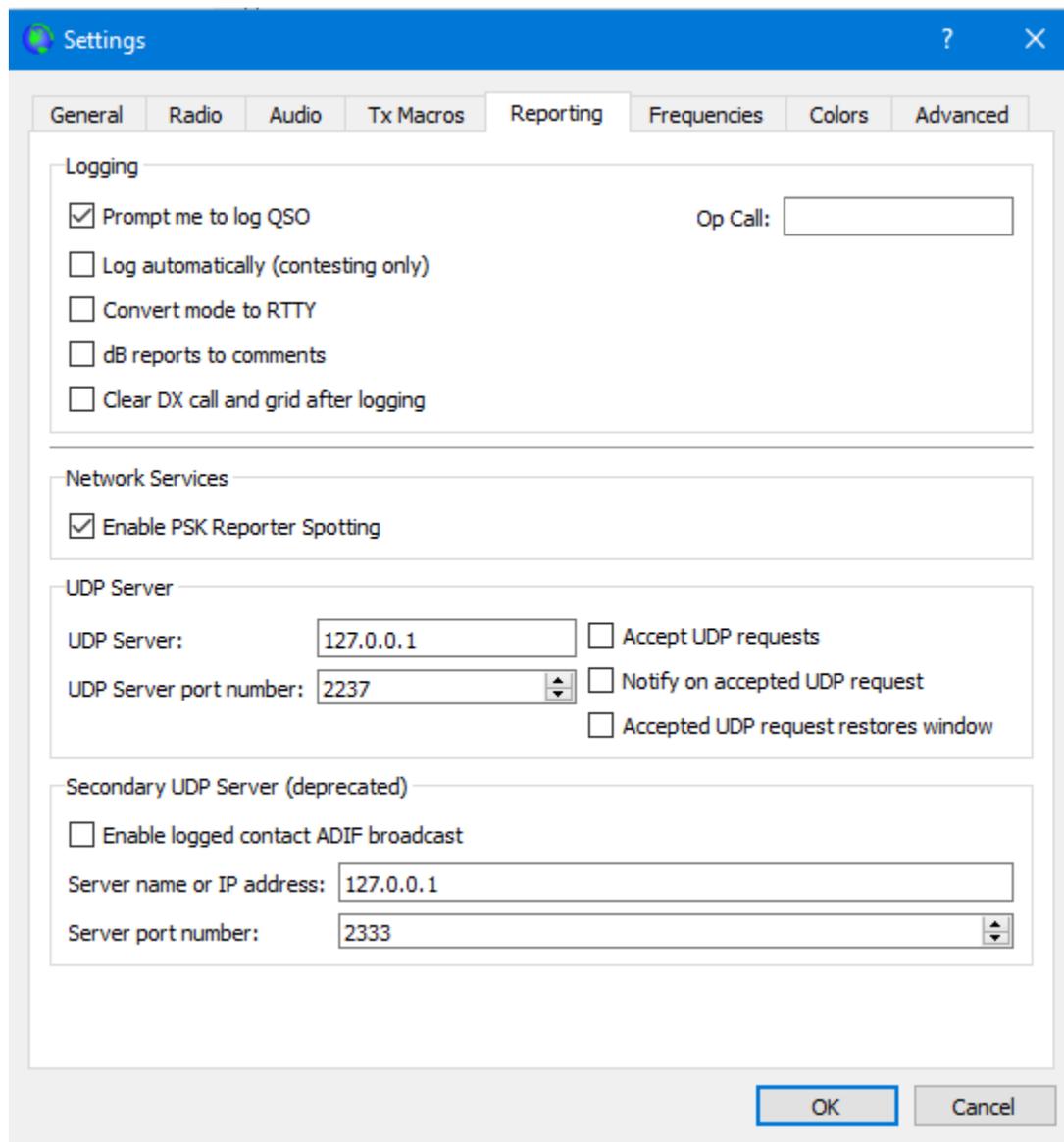
Next, click on the tab at the top labeled "Audio".

It will look like:



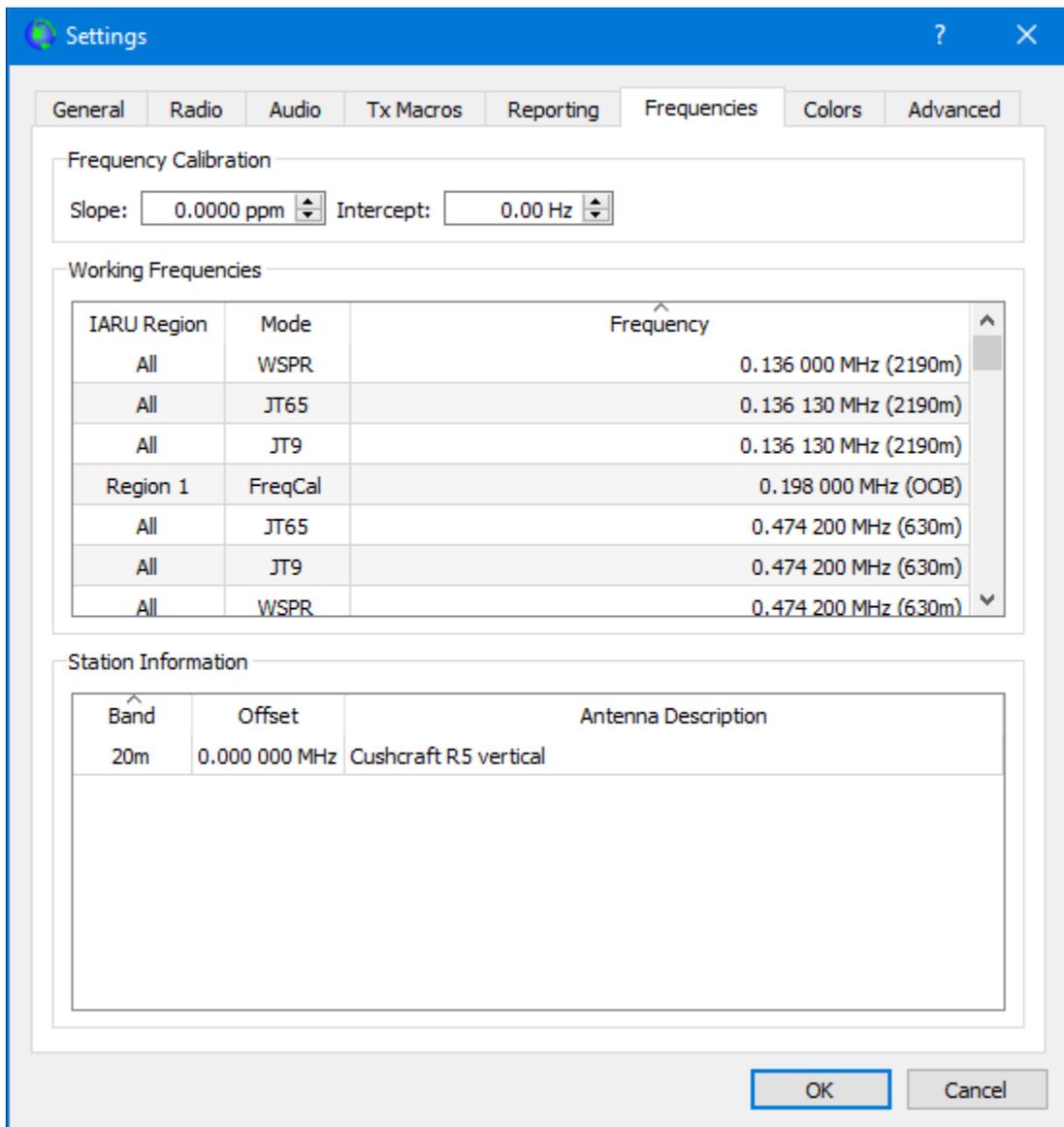
Set the "Input" and "Output" sound devices similar as shown above. You may change the directories but really do not need to do so. Leave the "Remember power settings by band" checkboxes checked as shown above. By "power settings" it is referring to the "Pwr" slider on the lower right side of the main screen which controls your audio output level.

Ignore the Tx Macros tab for now. Click on the Reporting tab as below:



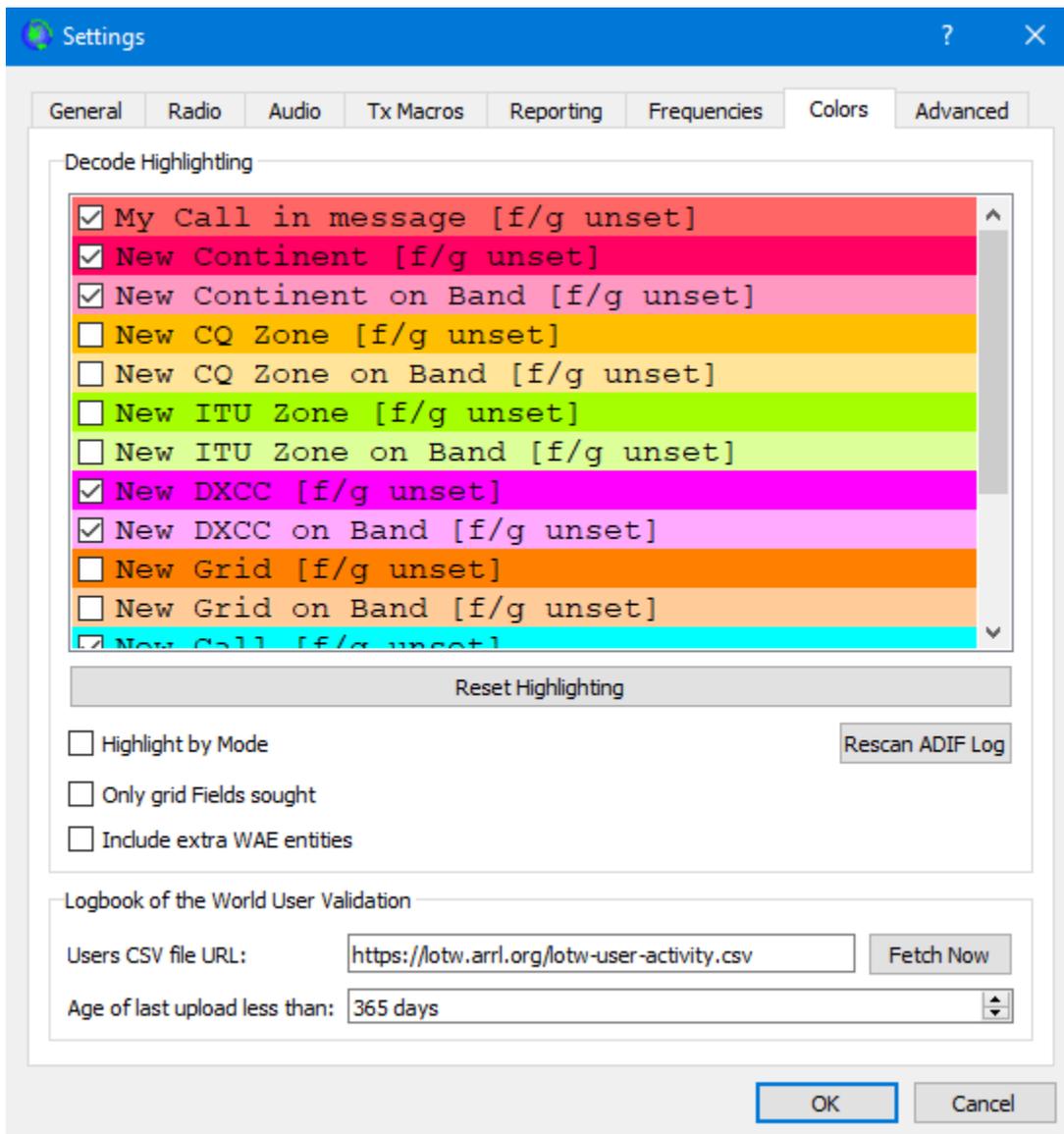
Check the Logging box "Prompt me to log QSO" as shown above. Also check the "Enable PSK Reporter Spotting" box. This is not absolutely required but allows the program to send all callsigns it hears to the "pskreporter.info" web site which helps all hams see where their own radio signal is being heard around the world. Leave the rest of the settings as they are for now.

The “Frequencies” tab controls where on the bands to go for FT8 and other digital modes.



The defaults are fine, we do not need to change anything there for now. Because FT8 is a very narrow-band mode, there are well established center frequencies on each band where you will find other operators. So, the defaults are the ideal starting point.

Next, the “Colors” tab:



Use this list to choose which type of calls you are interesting in highlighting on the main screen as you receive them. It is not necessary to change things here right away but you may want to after you use the program for a while.

No changes need to be made to the “Advanced” tab, just leave the defaults.

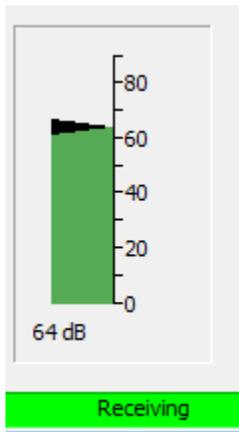
Click the “OK” button and we’re done with the “Settings” screen.

This shows the main program screen, where all the action happens. To receive FT8 use the “Mode” selection from the menu. The window on the left side will show all the calls you can hear. The window on the right side shows all the calls for the slice of receive bandwidth you have “selected”.

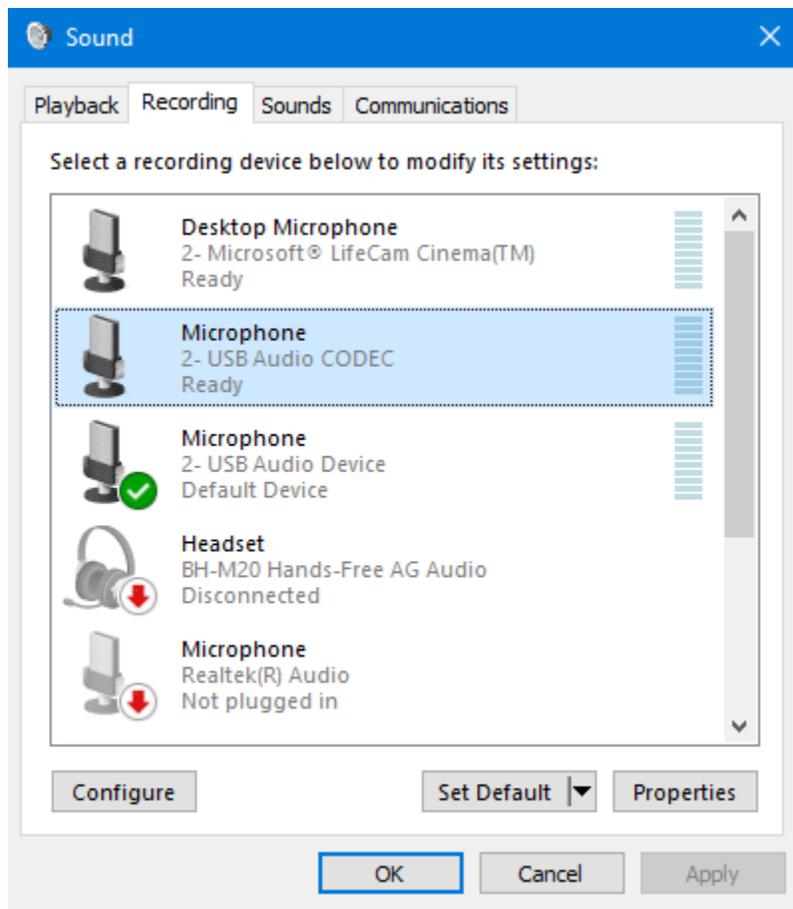
The white area at the top of the left window shows all the call messages. The blue lines are people calling CQ. The green lines are people calling CQ who have already been worked. The red lines are people calling CQ who are on a new Continent. These colors are configured in the “Colors” panel in the “Settings” menu.

The screenshot displays the WSJT-X v2.2.2 software interface. At the top, there are two panes showing call activity. The left pane is titled 'Band Activity' and the right pane is titled 'Rx Frequency'. Both panes have columns for UTC, dB, DT, Freq, and Message. The messages are color-coded: blue for CQ, green for worked CQ, and red for new continent CQ. Below the panes, there are several control buttons: 'Log QSO', 'Stop', 'Monitor' (highlighted in green), 'Erase', 'Enable Tx', 'Halt Tx', and 'Tune'. A central display shows the frequency '14.074 000' and a vertical green bar on the left indicating the receive audio level. Below the frequency display, there are fields for 'DX Call' (WAZTOP) and 'DX Grid' (EL29), along with 'Az: 97' and '1382 mi'. A date and time display shows '2020 Sep 15 19:11:43'. On the right side, there is a 'Generate Std Msgs' section with a list of messages and 'Tx' buttons. At the bottom, there are status indicators for 'Receiving', 'FT8', and '13'.

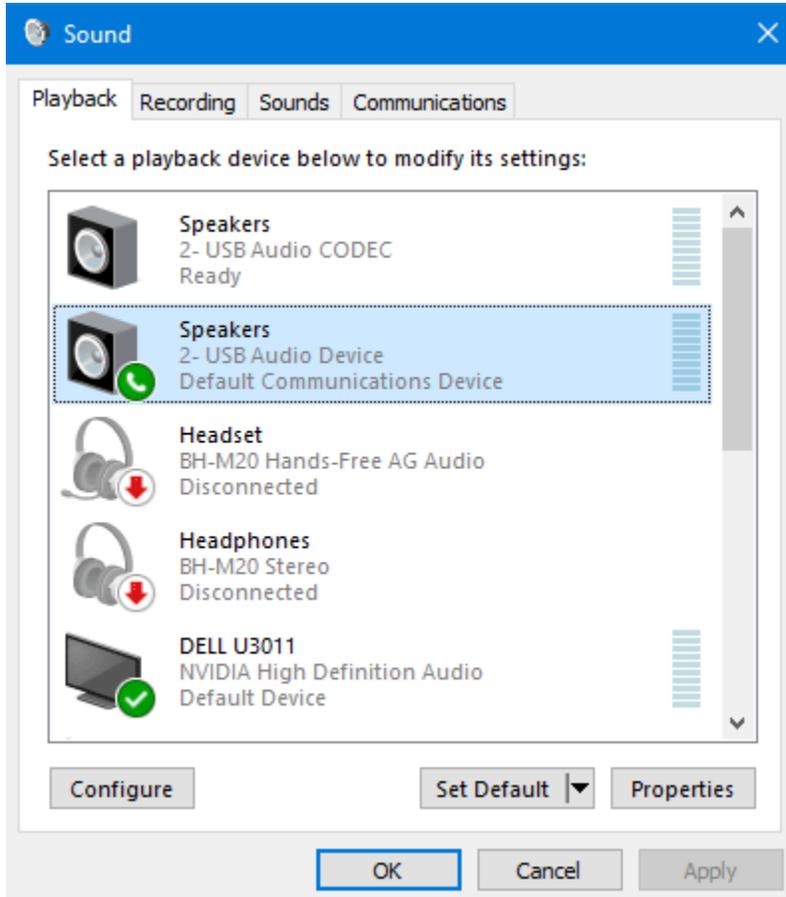
On the bottom left is a vertical green bar. This bar shows your receive audio level. This should be around the 50db mark, or about centered. The easiest way to adjust this is the audio control panel on your computer.



The example above is set a little too high. Below is an example of the Windows Audio control panel. You can find it by going to your Windows control panel and selecting the one labeled "Sound". Find your radio audio device in the "Recording" tab and adjust the level while watching the green bar on WSJT-X.



Your transmit audio level should be set around the 50 percent point using the “Sound” control panel as shown below. Click on the “Properties” button, then the “Levels” tab and set the slider to 50 percent.



Once that is set correctly then you will be controlling your transmit audio with the “Pwr” slider on the lower right side of the main WSJT-X windows.



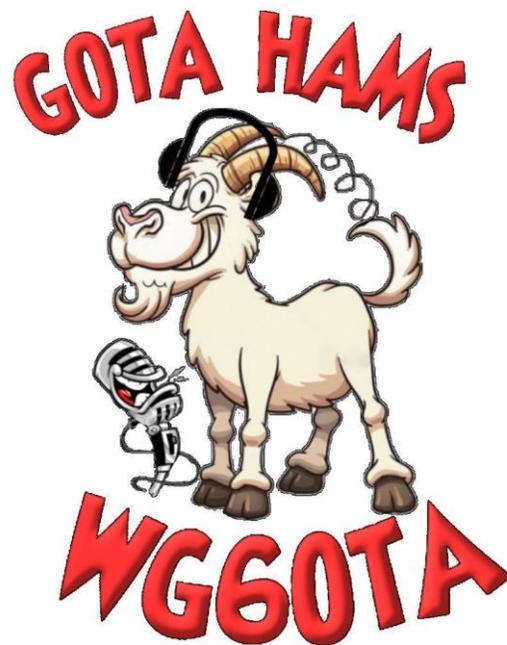
Set your radio output power via your radio controls to whatever power level you wish to use. 25 watts is a good starting point. Be sure that you have your antenna tuner set for the band you are on and it is tuned for the band you are using. I recommend 20 or 40 meters to start as they are busy bands. Set the meter on your radio to read ALC. Click the "Tune" button on the WSJT-X program and using the "Pwr" slider adjust your radio for minimum to zero ALC. It helps to have a RF power meter while adjusting this, you may need to bump it up just a little to get to the correct power level depending on your radio.

Once this is done you are ready to operate. You should be seeing messages scrolling past on the left window of the WSJT-X program.

That is all for now! Operating FT8 will be a topic for a future document.

73 and have fun!

Tim N6DLC



Be sure to visit Gotahams.com for more fun educational topics!