

FIELD DAY CONTACT SUGGESTIONS: FT8/FT4

Alachua County ARES(R) / NFARC

REVISED: 4/28/2024 for 2024 Field Day Rules

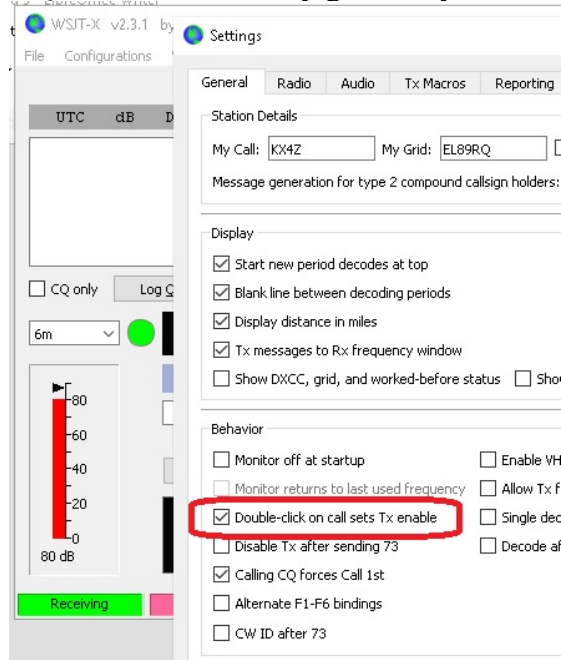
CONTEST SAVVY OVERVIEW: Two Operating Methods

WSJT-X decodes the entire receiver bandpass at once. Every station listening to a particular 3kHz space can see and decode all of the other stations. You do not have to be on the same exact frequency within the bandpass for the other station to contact you! So generally there is an advantage to putting your own signal in a relatively "clear" portion of the bandpass. The RED bracket shows where you are transmitting, and the GREEN bracket shows the frequency of a station you're conversing with (if you are).

#1. **Hold a frequency and keep calling CQ.** Put your transmitted tone (RED Bracket) in a clear spot.

- in the canned messages, click on the last one, the CQ
- Click "Enable TX" -- it will call CQ continuously.
- Immediately after each completed QSO, re-click to re-enable TX. -- or else UNCLICK the setting "Disable TX after sending 73" -- (FILE | Settings | General) thus it will keep transmitting a new CQ for you automatically.
- You will probably want **Tx Even/1st** selected so that your CQ is on even time periods.

#2 **Hunt and pounce** on other people calling CQ. Spot CQ's in the (Left) Received pane and double click them to answer. You'll want the program set so that when you double click on their CQline, it automatically gets ready to call them at next available interval:



For Hunt & Pounce you may still wish to keep your transmitted frequency constant in a relatively "clear" spot.

Experience has suggested that if the station calling CQ doesn't reply after a couple of tries, you should MOVE ON to another -- they can't hear you or you are too low in the reply list.

Most stations calling CQ will have "Call 1st" selected to the computer automatically picks the one for them to answer....

TIME SLOTS (Odd and Even): There are essentially two time slots in FT8 -- "odd" and "even" based on the last digit of the time stamp. Most people calling CQ will have Tx 1st/Even checked. This is inconsequential if you are hunting and pouncing -- WSJT-X will automatically have your response timed correctly.

Deeper Reading

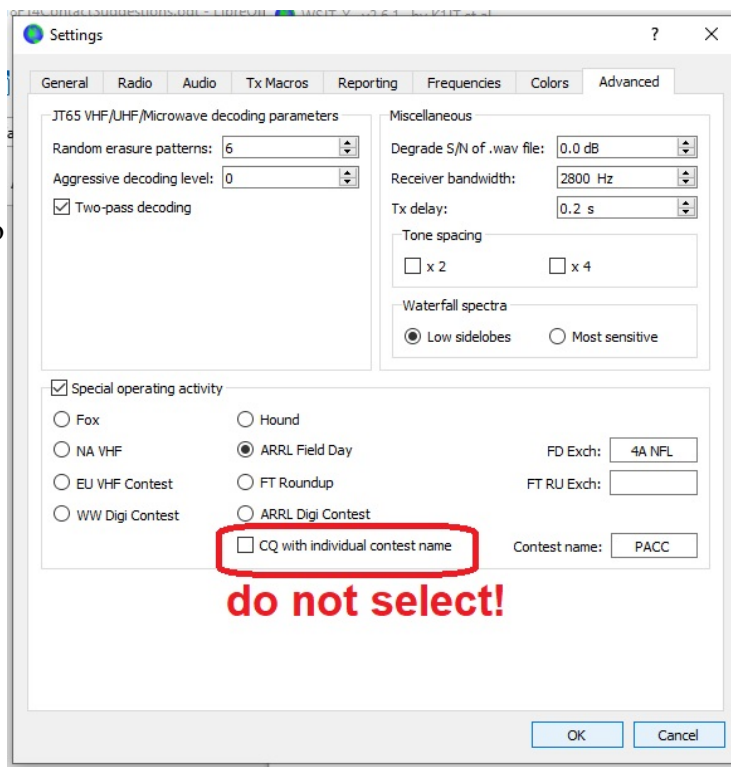
This is a highlight guide to operating FT8/FT4 in Field day. For more tips:
https://www.physics.princeton.edu/pulsar/K1JT/FT8_Operating_Tips.pdf
<https://physics.princeton.edu/pulsar/k1jt/wsjt-x-doc/wsjt-x-main-2.2.1.html>

WSJT-X FIELD DAY CONTEST SETTINGS

File | Settings | Tab "Advanced Settings" to confirm settings for FIELD DAY

Important settings include

- a) Selecting checkbox Special operating activity
- b) Selecting button ARRL FIELD DAY
- c) NOT selecting "CQ with individual contest name" -- it will know already what to say for ARRL Field Day
- d) Entering in correct FD Exchange



NITTY GRITTY OPERATING DETAILS

MOUSE SPEED: Due to RF interference to touchpads, you are likely going to want to use an external mouse (either wired or wireless to a little dongle). You may need to adjust the POINTER SPEED to your preferences. Click the Windows icon lower left edge of screen, then the starburst SETTINGS icon; type in the search window "mouse speed" and it will take you to dialog boxes where you can set the pointer speed, size etc.

WHEN YOU TAKE OVER: Enter yourself as the operator into the Logging System -- click "Operator" and enter call and initials:

www.n3fjp.com

Operator

Class	Sec	Date / Time	End	Mode	Country	Initials
1D	SF	06/28 17:01	40	DIG	USA	LG
3D	NC	06/28 17:00	40	DIG	USA	LG
1E	AL	06/28 16:59	40	DIG	USA	LG
1E	GA	06/28 16:53	40	DIG	USA	LG
1D	TN	06/28 16:47	40	DIG	USA	LG
1D	NC	06/28 16:44	40	DIG	USA	LG
1D	NFL	06/28 16:40	40	DIG	USA	LG
1E	NC	06/28 16:38	40	DIG	USA	LG
1D	NC	06/28 16:36	40	DIG	USA	LG

Operator: W4UFL
Initials: JC
Done

Warning! Please select your band and mode from the menu!
Warning waiver rule enabled (from Settings).

Set your BAND and MODE -- Click on BAND to pick the band, and click on MODE to select DIGITAL. THIS IS IMPORTANT to correct avoid DUPLICATES.

All digital contacts (FT8/FT4/RTTY/PSK31 etc) are equivalent. Only CW and SSB are different modes. Once you contact a station on FT8 on a particular band, you can't also contact that station on PSK31 or RTTY

We use TWO pieces of software to allow semi-automated logging which makes it very, very easy.

1. Get **N3FJP Field Day Contest Log** started on your computer. (It should have already been properly configured so you don't have to configure anything.) If you click on NETWORK you can see all the stations listed and what bands/modes they are currently using, as a check on your connection.

2. Get **WSJT-X** (provides FT8/FT4 coding/decoding) started on your computer. Click to select your BAND -- the computer will automatically put your radio on the correct starting frequency. (You can wander a bit as discussed below if the bands are completely chock full)

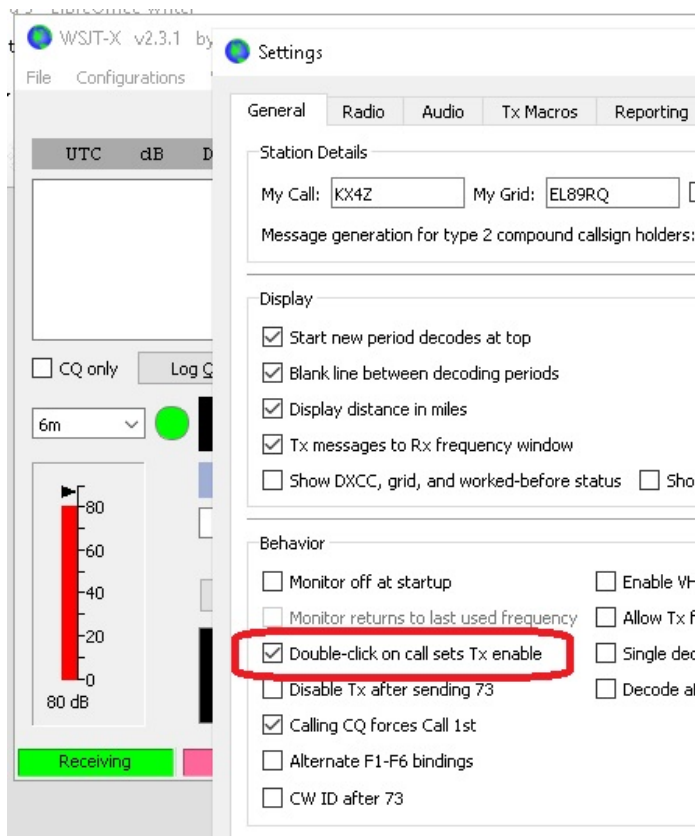
Bring WSJT-x to the front, you'll be using it for almost everything.

Select your mode, generally FT8 or FT4. During Field Day 2020 we saw much more usage of slower FT8 instead of faster FT4, and generally "spilling out" of their normal 3kHz widths a bit. **In later years, we have seen more usage of FT4**

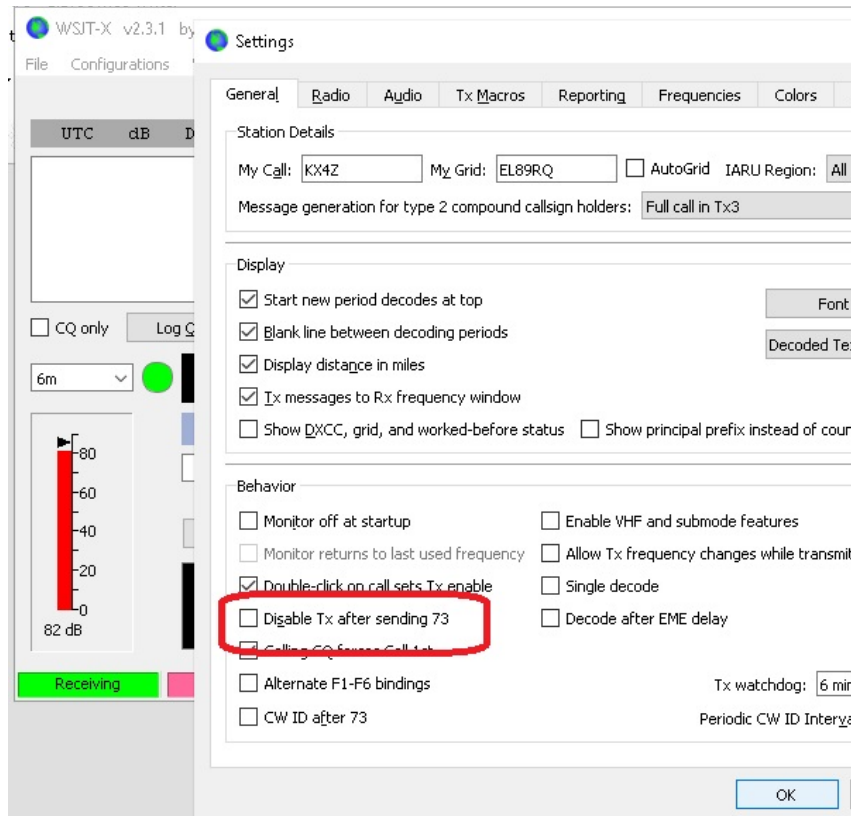
PUT YOUR TRANSMITTER ON A CLEAR SPOT SOMEWHERE: Where in the bandpass you will transmit is shown by the RED bracket. SHIFT-LEFT CLICK to set the RED (transmit) bracket on a clear spot. If the entire band is full, you may have to move the transmitter dial 500Hz lower or maybe a kHz or 2 higher to get more room.

Basic WSJT-X Application Settings That Will Help You

- **TX even/1st** -- of benefit if you are calling CQ. Irrelevant if you are hunting and pouncing. 1 generally click to select HOLD TX FREQUENCY. Everyone decodes their entire passband, so if you are in their passband, they will decode you. **More important to keep your transmitter at a CLEAR SPOT.**
- **Hold Tx Frequency** -- a good idea to find a CLEAR TX (red bracket, SHIFT-leftclick) FREQUENCY and stay there.
- **Auto Seq** -- generally you want it autosequencing the contact info for you
- **Call 1st** -- if you are calling CQ this chooses the first-decoded to respond to.
- **"Double Click on a Station Enables TX":** will make hunting and pouncing a lot easier: Setting so that if you double click on a station calling CQ, it automatically enables TRANSMIT to answer them: FILE | Settings | General



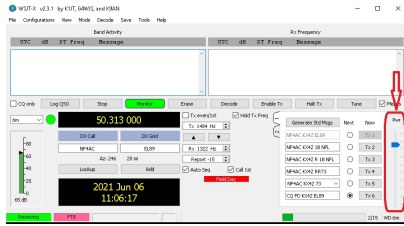
- **Allow Immediate Retransmit** -- UNCLICK the Disable TX after sending 73 will likely be your plan if you are calling CQ.



Setting up the Transmitter:

ICOM SETTINGS FOR FT8/FT4 WSJT-X		
ITEM	CHOICE	COMMENT
MODE	Select USB-D. Touch the current mode (USB LSB, whatever it is) on the screen and you'll get the options	Software should do this for you if set for RIG = ICOM 7300. CATControl: Serial Port chosen correctly. (CHECK USING DEVICE MANAGER IF NOT WORKING) Baud rate 9600 and defaults work, (The 7300 auto-bauds, so some will be set for 115200) Polling interval 2 seconds for 9600, 1 sec for faster. PTT Method CAT MODE: Data/Pkt Split Operation: Fake It
To get a solid tone:	Use TUNE button on WSJT-X	

2023 Field Day limit for our group is 100 watts -- you want to set the radio for 100 and adjust your modulation for slightly less than that digitally, to ensure LINEAR operation. Normally there shouldn't be any or only a slight bit of "ALC" indicated.

TYPICAL POWER SETTINGS		
Total Output Power	<p>2024 Field Day limit is 100 watts for our group.</p> <p>Our inexpensive power meters are only accurate when the antenna tuner is TUNED and presents a reasonably 50 ohm load. .</p>	<p>This is the power class we are using for our operation.</p> <p>Our power measurements are inexact and only accurate when the TUNER is tuned to present 50 ohms to the station.</p>
Amplifier? No planning to use any		<p>ASSUMING WSJT-X PWR SLIDER (right hand side of software) = 0 dB</p>  <p>ASSUMING ICOM 7300 USB MOD Level = 50%</p>

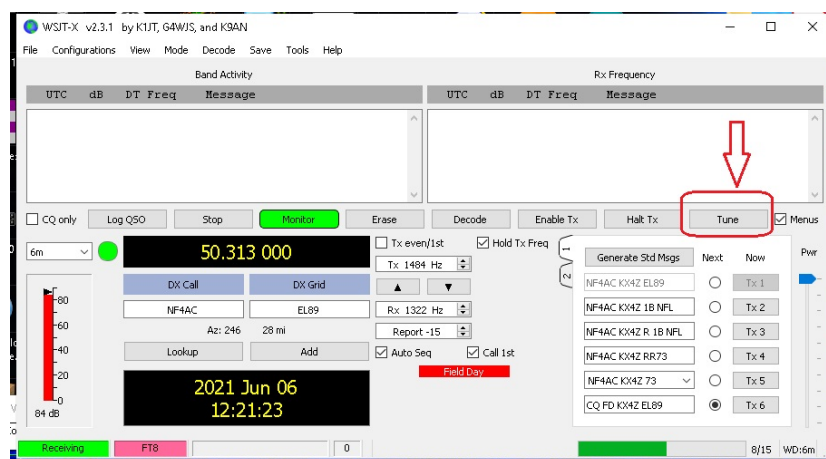
TYPICAL TUNE UP SEQUENCE

This is much easier in 2023 because we usually don't need an amplifier so all we have to do is get the antenna tuner adjusted, set the modulation and power levels, and we're good.

(Try to do this with your transmitted signal in a clear spot so you don't QRM other users)

❑ **Tune the Antenna Tuner** using the Icom 7300 alone. (Press "TUNER" button on Icom 7300.) Now the station sees 50 ohms looking into the antenna tuner, and power measurements will be reasonably accurate. .

❑ **Check for Linear (non-splattering) Operation:** Generate a steady signal from the transceiver by using the TUNE button on your WSJT-X application:



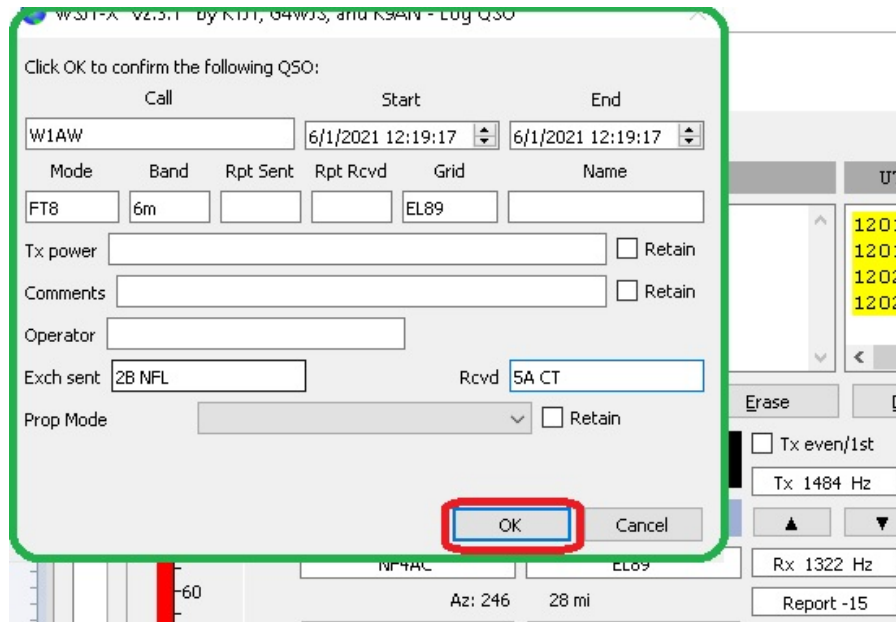
❑ With the 7300 set for 100 watts nominal output, **Adjust the modulation level so that the 7300 output power level = approx 80 watts, or 80% shown on the 7300 output power measurement. .** (You can adjust the 7300 output power in real time while sending a tone.) *In FT8/FT4 from then on your power will remain pretty constant. The ALC display should show little to no ALC in use with these adjustments.*

❑ Proceed to make FT8/FT4 contacts normally.

Logging

We have the WSJT-X software connected via a tcp/ip "port" to the N3FJP software so that it will automatically log each completed contact. (This can be changed to require you to confirm, but experience showed it was not necessary.) You can arrange your views to allow you to see the logging software on the same or a 2nd screen and watch them get added.

Back when we used the confirmation system, it looked like this:

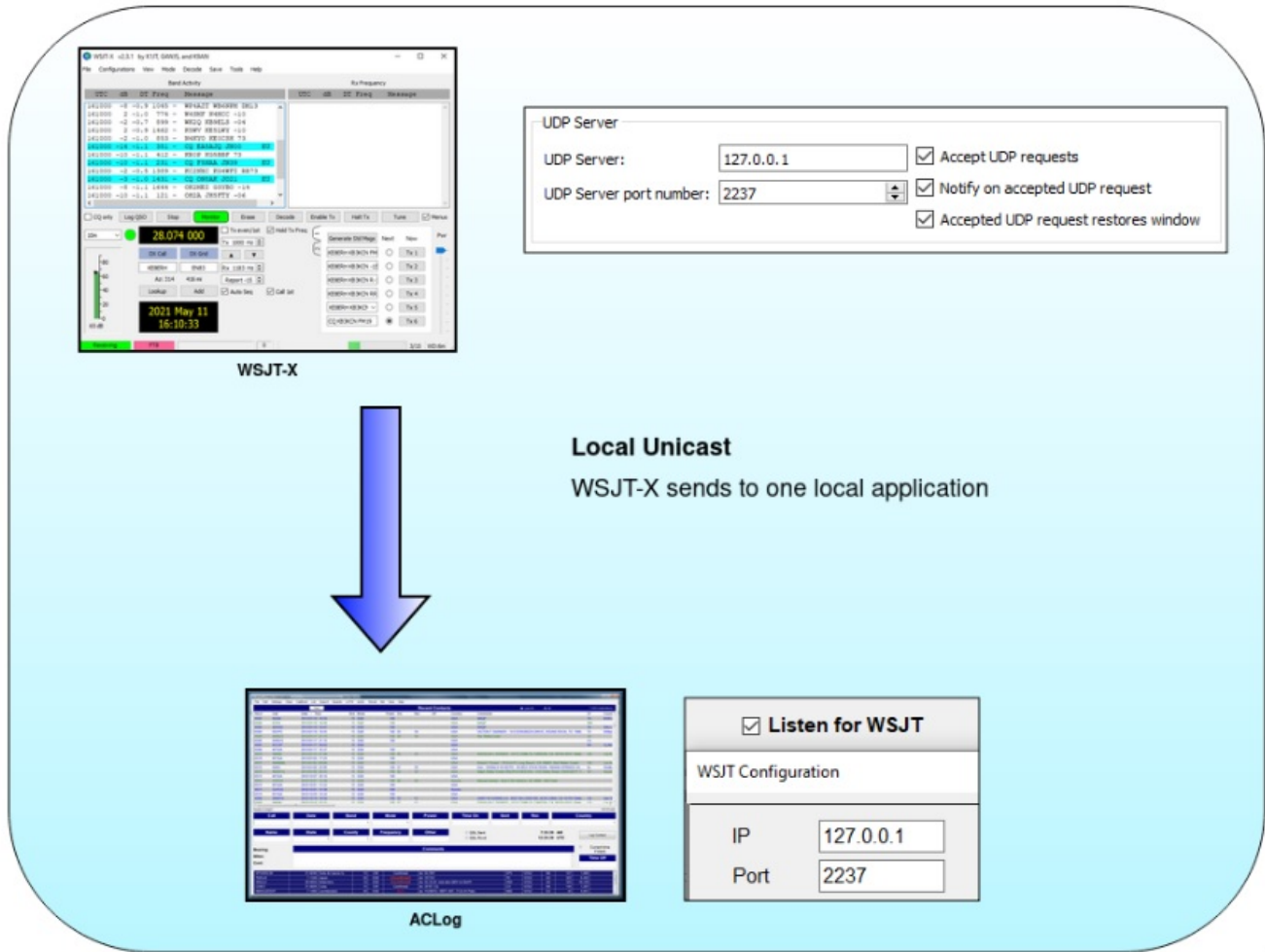


Click OK if the call and exchange look properly filled in. You should quickly get a confirmation that the contact has been logged in our system. It will also be maintained in WSJT-X's internal contest log.

APPENDIX: N3FJP LOGGING

Reference: <http://www.n3fjp.com/help/wsjt-x-integration-with-n3fjp-software.html>

A simple change in each of the two softwares (WSJT-X and N3FJP) is required to arrange for automated logging:



IN WSJT-X

Click on FILE | SETTINGS. Choose the Reporting Tab. In the third area down in the dialog box:

- Set UDP Server to your own computer: 127.0.0.1 (the "loopback" address)
- Set UDP Port to 2237
- Accept UDP Requests
- Notify on accepted UDP request
- Accepted UDP request restores window

IN N3FJP:

Click **Settings** | **Application Program Interface (API)**.

Between the heavy black horizontal bars, click to enable "**Listen for WSJT**"

Click on the CONFIGURE and verify that it is set for:

IP: 127.0.0.1 (your own computer's loopback number)

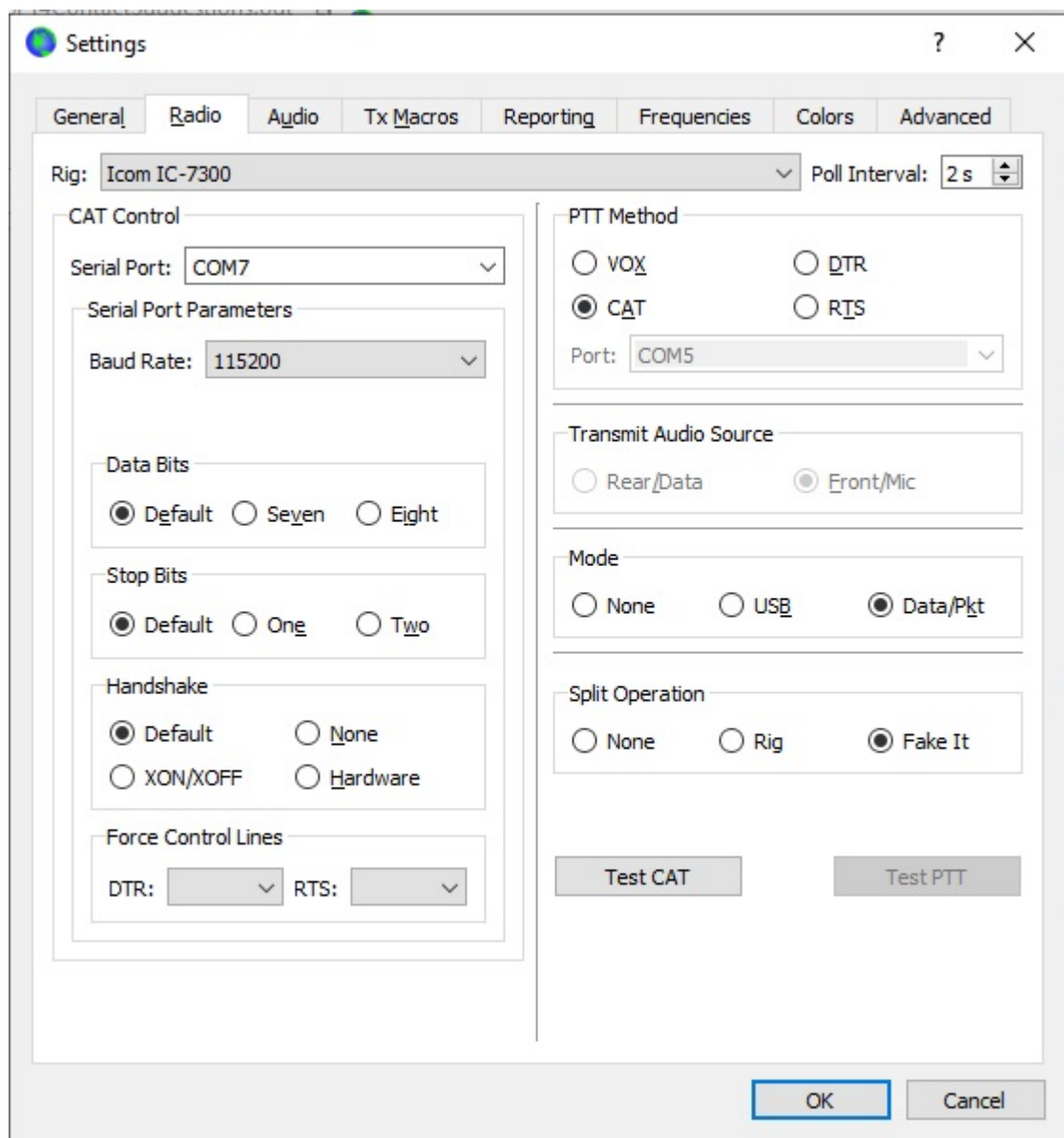
PORT: 2237 (to agree with the port that WSJT expects to communicate through)

About every 14 seconds there may be a green flash to tell you they are communicating.

TYPICAL ICOM 7300 "RADIO" Setup for WSJT-X

- Your COM port may differ from that shown below. Use DEVICE MANAGER to find where your ICOM7300 has been found. You must have the ICOM USB Driver in place for any of this to work.
- Speed 115200 works for many ICOM 7300s (which are usually set to auto-baud-rate USB communications)
- ICOM 7300 set for DATA MOD = USB

Click on FILE | Settings Then select the RADIO tab:



Always test your CAT settings!

THIS TABLE MAY BE HELPFUL TO SUGGEST FREQUENCIES

CW	Typically for non-Extra Class, begins 25 kHz above bottom of band.	CW speeds generally <i>get slower as you get to higher frequencies.</i> DONT GO BEYOND 70 kHz from bottom -- may be PSK31 74 kHz above -- that is where FT8 starts!
PSK31	Typically about 70kHz up from bottom of band, to 3kHz above that 80 M: try 3.580 40 M: try 7.040	
FT8	Typically 74kHz above bottom of band, to 3kHz above that. Note these frequencies: 3.573 50.313	(During FD this may extend slightly higher or lower)
FT4	3.568 3.575 (overlaps FT8 slightly) 7.0475 (pse confirm) 14.080 21.140 28.180 50.318	The 40 meter FT4 frequency makes it difficult to operate CW simultaneously. The 20 meter FT4 frequency makes it much easier to operate CW simultaneously
JS8	Typically 78 kHz above bottom of band	
RTTY	Typically from 80 kHz above bottom of band to and through the 97.221(b) automated station frequencies.	For 40 meters, may extend up to 7.125 (end of legal frequencies) For 20 meters, may extend up to 14.150 For 15 meters, may extend up to 21.200 For 10 meters, ?? up to 28.3?? (doubt it would get that high at all)

FCC SUBBANDS

