FIELD DAY CONTACT SUGGESTIONS: FT8/FT4
Alachua County ARES(R) / NFARC

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

Set your BAND and MODE -- Click on BAND to pick the band, and click on MODE to select DIGITAL.

 All digital contacts (FT8/FT4/RTTY/PSK31 etc) are equivalent.   Only CW and SSB are different modes.

> **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/wsjtx-doc/wsjtx-main-2.2.1.html

We use THREE 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 -- the logging computer should have already been entered.   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)

3. Get **JTAlert** started on your computer.   This is the "glue" intermediary program between WSJT-X and the N3FJP Contest Log.

Bring WSJT-x to the front, you'll be using it for almost everything.
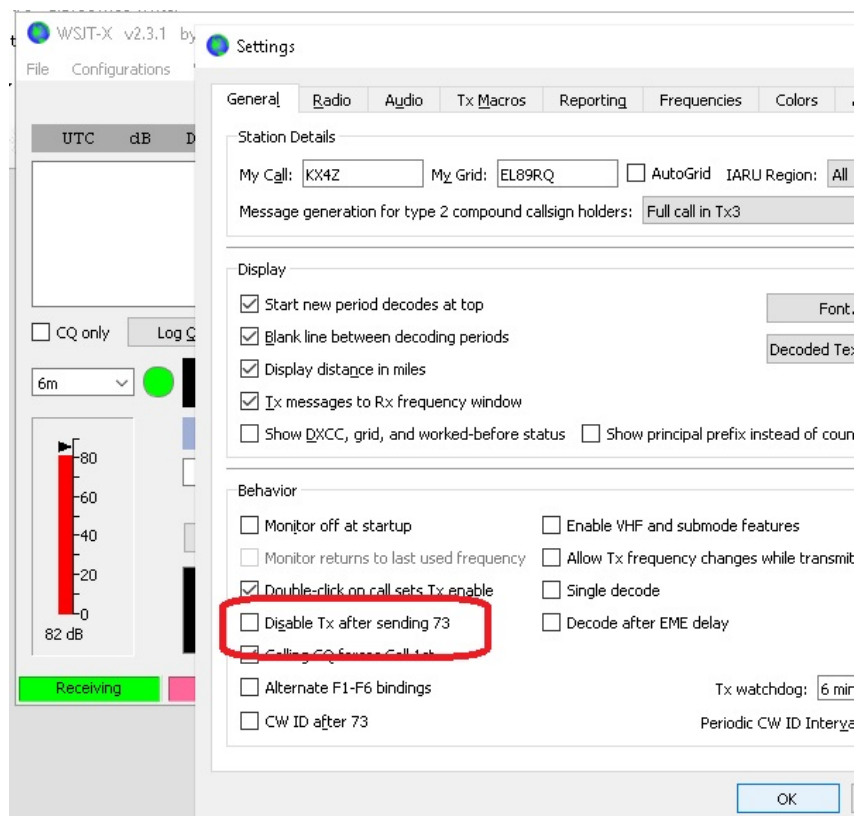Select your mode, generally FT8 or FT4.

PUT YOUR TRANMITTER ON A CLEAR SPOT SOMEWHERE: 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

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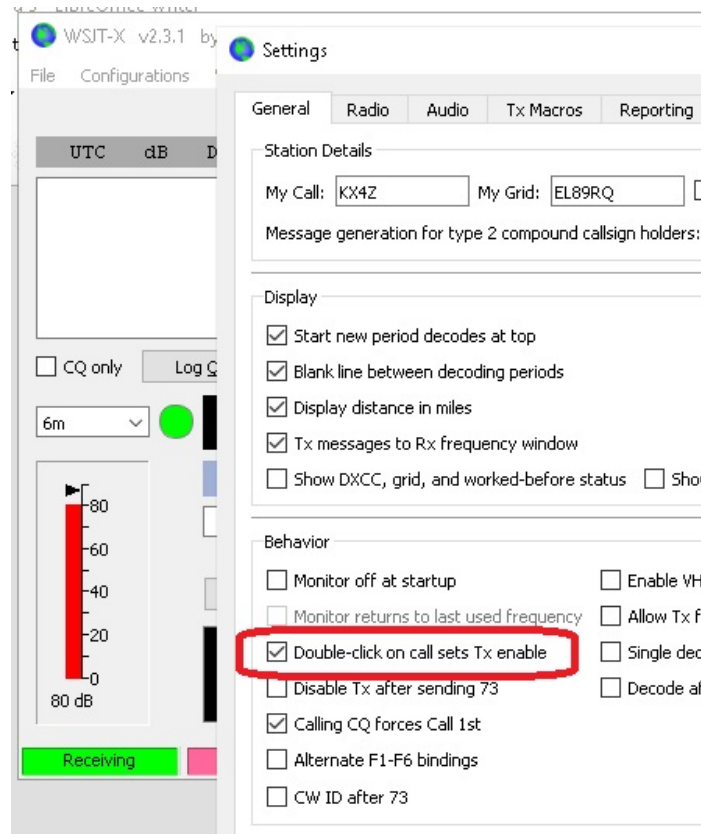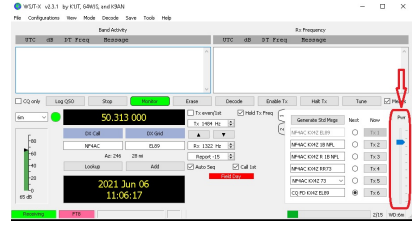
- **Allow Immediate Retransmit** -- UNCLICK the Disable TX after sending 73 will likely be your plan if you are calling CQ.

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 700. CATControl: Serial Port chosen correctly. (CHECK USING DEVICE MANAGER IF NOT WORKING) Baud rate 9600 and defaults work, **Polling interval 2 seconds** PTT Method CAT MODE: Data/Pkt Split Operation: Fake It
To get a solid tone:	Use TUNE button on WSJT-X	

You can use right up to 150 Watts output CW with our amplifiers. .

TYPICAL POWER SETTINGS		
Total Output Power	150 Watts into a TUNED antenna tuner presenting roughly 50 ohms impedance to the station.	This is the power class we are using for our operation. Our power measurements are inexact and only accurate when the TUNER is tuned to present 50 ohms to the station.
Typical FT8 7300 % power needed to excite the amplifier to 150 watts output	**With no bandpass filter:** 80Meter CW: approx 24% (24 watts from transmitter) 20Meter CW: approx 15-20% With Bandpass Filter:	ASSUMING WSJT-X PWR SLIDER (right hand side of software) = 0 dB ASSUMING ICOM 7300 USB MOD Level = 50%
Typical **SB-200 amplifier plate current reading** when the amplifier is tuned correctly and producing 150 watts output	Approx 200-220 mA	About 80 mA = idling plate current. So perhaps only 150mA of this is RF? .

TYPICAL TUNE UP SEQUENCE

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

❑ **Tune the** <u>Antenna Tuner</u> using the Icom 7300 alone (*amplifier in barefoot mode*) Now the station sees 50 ohms.

NOTE

For the digital techniques, there is a pretty substantial benefit for getting the amplifier going -- it allows you to move from 50W output solid digital transmission from the ICOM7300, to 150W output solid digital -- 4.7 dB stronger signal.   The ICOM 7300 just can't do 100W solid digital -- that's too much heating for it.   The amplifier is able to LOAF at 150W digital output.

❑ **Pre-Set the Amplifier LOAD Capacitor** as per the pen markings on the front panel, and basically don't bother futher with it.

❑ **Pre-Set the Amplifier TUNE Capacitor** per the markings and the band you're using. We will more finely adjust this as it is important.

❑ **Enable** the Amplifier, (switch on the front of the Amplifier)

❑ Generate a steady signal from the transceiver by using the TUNE button on your WSJT-X application:
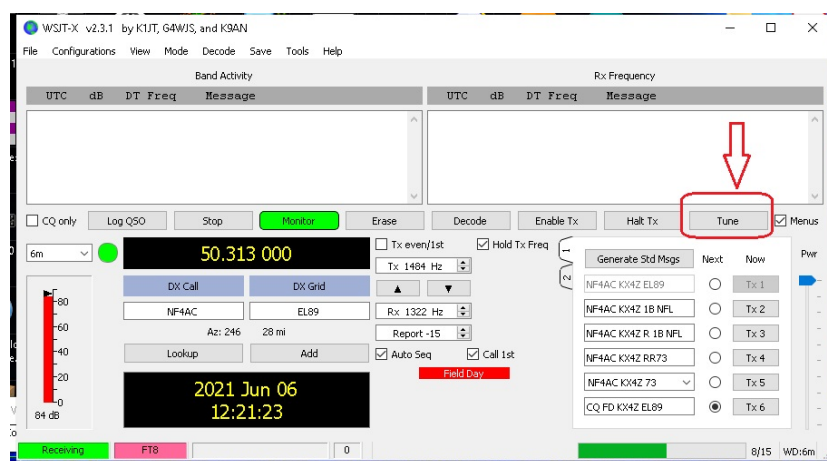
❑Promptly adjust the amplifier TUNE capacitor for peak OUTPUT RF
on ANYTHING that shows your relative output power -- such as
- Micronta Radio Shack SWR Meter
- SB-200 "Rel Pwr" meter setting
- even (last ditch) the LED bargraph on the LDG Antenna Tuner

and note the power (WATTS) on the power output monitor.

> Adjusting that amplifier TUNE capacitor for peak OUTPUT RF is the single most important step. Once that is done reasonably well, this amplifier is so tough you just can't hurt it or distort at these piddling 150W output levels.

❑ **Adjust the 7300 output power level to get the OUTPUT RF = 150 Watts.**   (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.*

❑Proceed to make FT8/FT4 contacts normally.

CONTEST SAVVY: Two Operating Methods

1. Hold a frequency and keep calling CQ.
> a) in the canned messages, click on the last one, the CQ
> b) Click "Enable TX" -- it will call CQ continuously.
> c) 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.
> d) 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.   You'll want the program set so that when you
double click on their CQ line, it automatically gets ready to call them at next available interval:
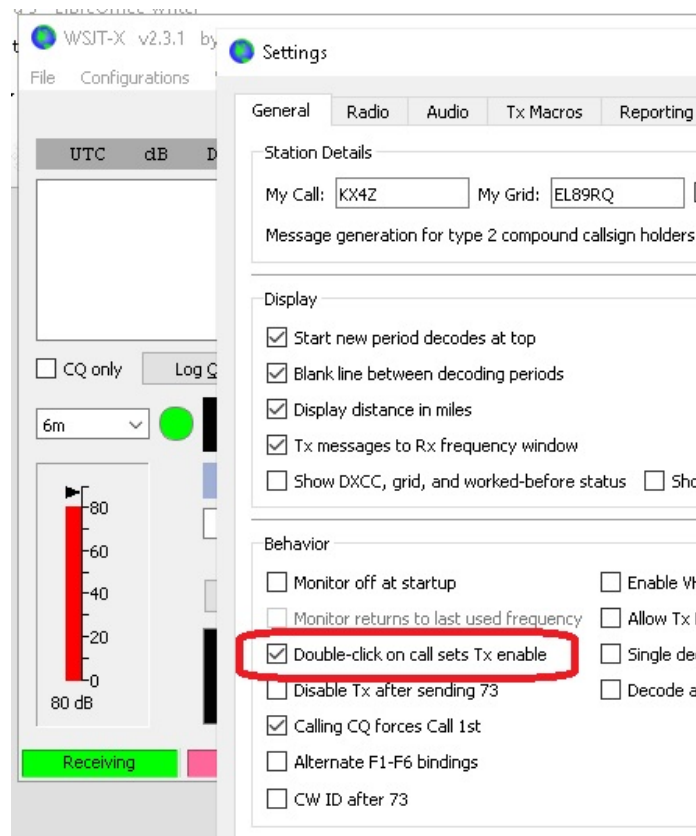
Experience has suggested that if they don't reply after a couple of tries, you should MOVE ON to
another -- they can't hear you or you are too low in the reply list.

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

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 pounching -- WSJT-X will automatically have your response timed correctly.

Logging

Whenever a QSO is completed, a logging box will show up already filled in with the entries for your just-completed QSO

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.

KEY

10 Meters (28 MHz)
28.000 28.300 28.500 — 29.700 MHz
E,A,G; N,T (200 W)

6 Meters (50 MHz)
50.0 50.1 — 54.0 MHz
E,A,G,T

2 Meters (144 MHz)
144.0 144.1 — 148.0 MHz
E,A,G,T

1.25 Meters (222 MHz)
219.0 220.0 222.0 — 225.0 MHz
E,A,G,T; N (25 W)

70 cm (420 MHz)*
420.0 — 450.0 MHz
E,A,G,T

33 cm (902 MHz)*
902.0 — 928.0 MHz
E,A,G,T

23 cm (1240 MHz)*
1240 1270 1295 1295 — 1300 MHz
E,A,G,T; N (5 W)

*Geographical and power restrictions may apply to all bands above 420 MHz. See *The ARRL Operating Manual* for information about your area.

All licensees except Novices are authorized all modes on the following frequencies:

2300-2310 MHz
2390-2450 MHz
3300-3500 MHz
5650-5925 MHz
10.0-10.5 GHz ‡
24.0-24.25 GHz
47.0-47.2 GHz
76.0-81.0 GHz
122.25-123.0 GHz
134-141 GHz
241-250 GHz
All above 275 GHz

‡ No pulse emissions

2,200 Meters (135 kHz)
Amateurs wishing to operate on either 2,200 or 630 meters must first register with the Utilities Technology Council online at https://utc.org/plc-database-amateur-notification-process/. You need only register once for each band.

135.7 kHz — 137.8 kHz; 1 W EIRP maximum; E,A,G

630 Meters (472 kHz)
5 W EIRP maximum, except in Alaska within 496 miles of Russia where the power limit is 1 W EIRP.
472 kHz — 479 kHz; E,A,G

40 Meters (7 MHz)
7.000 7.025 7.075 7.100 7.125 7.175 — 7.300 MHz
E; A; G; N,T (200 W)
(ITU 1,3 and FCC region 2 west of 130° west or below 20° north)
N,T outside region 2

See Sections 97.305(c), 97.307(f)(11) and 97.301(e). These exemptions do not apply to stations in the continental US.

30 Meters (10.1 MHz)
Avoid interference to fixed services outside the US.
10.100 10.150 MHz
200 Watts PEP; E,A,G

20 Meters (14 MHz)
14.000 14.025 14.150 14.175 14.225 14.350 MHz
E; A; G

17 Meters (18 MHz)
18.068 18.110 18.168 MHz
E,A,G

15 Meters (21 MHz)
21.000 21.025 21.200 21.225 21.275 21.450 MHz
E; A; G; N,T (200 W)

12 Meters (24 MHz)
24.890 24.930 24.990 MHz
E,A,G

160 Meters (1.8 MHz)
Avoid interference to radiolocation operations from 1.900 to 2.000 MHz.
1.800 1.900 2.000 MHz
E,A,G

80 Meters (3.5 MHz)
3.500 3.525 3.600 3.700 3.800 4.000 MHz
E; A; G; N,T (200 W)

60 Meters (5.3 MHz)
CW, Dig: 5332 5348 5358.5 5373 5405 kHz
USB: 5330.5 5346.5 5357.0 5371.5 5403.5 kHz
2.8 kHz
E,A,G (100 W)

General, Advanced, and Amateur Extra licensees may operate on these five channels on a secondary basis with a maximum effective radiated power (ERP) of 100 W PEP relative to a half-wave dipole. Permitted operating modes include upper sideband voice (USB), CW, RTTY, PSK31 and other digital modes such as PACTOR III. Only one signal at a time is permitted on any channel.