

# INTRODUCTION TO FT8 DIGITAL MODE/ WSJT-X SOFTWARE (VERSION 5. Dec 23, 2018)

**Note: This is just a quick reference guide. See the User's Manual for details at:  
V2.0: [https://physics.princeton.edu/pulsar/k1jt/Quick Start WSJT-X 2.0.pdf](https://physics.princeton.edu/pulsar/k1jt/Quick%20Start%20WSJT-X%202.0.pdf)**

1. REFERENCES: WSJT-X "WHISPER" DIGITAL MODE SOFTWARE (Comments for Version 2.0)
  - A. WSJT-X WEBSITE-- <https://physics.princeton.edu/pulsar/k1jt/wsjitx.html>
  - B. WSJT-X USERS GUIDE— <https://physics.princeton.edu/pulsar/k1jt/wsjitx-doc/wsjitx-main-2.0.0.html>
  - C. WSJT-X USERS GROUP-- <https://groups.io/g/FT8-Digital-Mode>
  - D. YOUTUBE VIDEO-- <https://www.youtube.com/watch?v=YLt1z1lavx0>
  
2. DESCRIPTION: FT8 DIGITAL MODE:
  - A. NEWER DIGITAL MODE FOR HAM RADIO—TEXT BASED MESSAGES
  - B. SEMI-AUTOMATED CONTACTS—CLICK ON A CALLSIGN, IF THEY ANSWER IT'S AUTOMATIC.
  - C. SLOW TRANSMISSION SPEEDS- SHORT BACK AND FORTHS, QSO CAN TAKE UP TO SEVERAL MINUTES
  - D. LIMITED MESSAGE CONTENT—SHORT PRE-CANNED MESSAGES
  - E. POPULAR WITH COMPUTER GEEKS AND AWARD CHASERS—GRIDS, WAS, DXCC, WAC, ETC
  - F. WORKS WELL FOR LOW POWER, LIMITED ANTENNA STATIONS.
  - G. WILL CREATE ADIF FILES-- WORKS WELL WITH QRZ LOG AND LOTW WHEN ADIF FILES ARE UPLOADED TO COUNT FOR AWARDS.
  - H. THE FT8 SOFTWARE IS EXTREMELY SENSITIVE AND WILL DECODE SIGNALS WELL BELOW THE NOISE LEVEL, NOT HEARD BY THE HUMAN EAR OR SEEN ON SPECTRUM SCOPES. E.G. DOWN TO AROUND -25 DB.
  - I. KNOWN TO BE ADDICTIVE.
  
3. SETTING UP THE COMPUTER:
  - A. MUST BE ABLE TO OPERATE WSJT-X SOFTWARE—MOST OPERATING SYSTEMS OK WINDOWS 7 & NEWER
  - B. MUST HAVE GOOD COMPUTER TIMING SOFTWARE—DIMENSION 4 OR SIMILAR, SEE WSJT WEBSITE, ACCURATE COMPUTER TIME IS A MUST.
  - C. DOWNLOAD AND INSTALL WSJT-X SOFTWARE FROM WEB SITE ABOVE.
  
4. SETTING UP THE WSJT-X SOFTWARE OPTIONS—ESTABLISHING A CONFIGURATION:
  - D. IN THE WSJT-X HOME/MAIN PAGE, CLICK ON FILE--SETTINGS—THEN GO TO--
  - E. GENERAL TAB— FILL IN YOUR CALL, GRID, ITU REGION, CHECK OPTIONS YOU WANT—"TX MESSAGES TO RECEIVE WINDOW, DISTANCES IN MILES, DOUBLE CLICK ON CALL SETS TX ENABLE, SHOW DX ENTITY AND WORKED BEFORE STATUS".
  - F. RADIO TAB—INPUT YOUR MODEL, CAT CONTROL, PORT, BAUD, 8N1, AUDIO SOURCE (EXTERNAL SOUND CARD—MICROPHONE AND SPEAKER AUDIO)
  - G. AUDIO TAB—SELECT PROPER MICROPHONE AND SPEAKER OPTIONS IF USING AN EXTERNAL SOUND CARD IN A TNC (FREQUENTLY "USB AUDIO CODEC").

- H. TX MACROS TAB— YOU CAN ADD SHORT PRE-CANNED MESSAGES HERE TO BE USED IN TX MESSAGE 5 (MESSAGE LENGTH NO LONGER THAN 13 CHARACTERS LONG)
  - I. REPORTING TAB- SELECT “PROMPT TO LOG QSO, DB REPORT IN COMMENTS, ENABLE PSK REPORTING, IF USING N1MM LOGGER- ENABLE LOGGED CONTACT BROADCAST”.
  - J. VIEW COLOR SCHEME TAB TO KNOW WHAT THE COLORS OF THE CALL SIGNS MEAN IN THE MAIN AND RECEIVE WINDOWS. V 2.0 HAS MANY NEW COLORS TO INDICATE “NEW” TYPES OF CONTACTS. E.G NEW DXCC, NEW GRID, NEW CONTACT, ETC.
  - K. IN VIEW TAB OF MAIN WINDOW--SELECT “WATERFALL” TO SEE SIGNAL FREQUENCIES IN THE WATERFALL WINDOW.
  - L. THE “MONITOR” BUTTON IN THE MAIN WINDOW MUST BE SELECTED TO SEE THE CQ CALLS AND CALL SIGNS IN THE BAND-WIDE AND RECEIVE WINDOWS.
5. SETTING UP THE SOUND CARD/TNC/RADIO:
- A. ADJUST THE RECEIVE AUDIO TO KEEP RECEIVED SIGNAL STRENGTH IN THE WSJT WINDOW IN THE GREEN AROUND 70-75. IF IT TURNS RED THE RECEIVE AUDIO IS TOO HIGH.
  - B. ADJUST THE TRANSMIT AUDIO TO KEEP ALC ON THE TRANSMITTER OUTPUT TO AT OR NEAR ZERO (VIA SOUND CARD OR TNC)
  - C. ADJUST TRANSMIT OUTPUT POWER TO AROUND 10-15 WATTS, SLIGHTLY HIGHER FOR DX.
  - D. IF “DATA/PKT” IS SPECIFIED ON THE RADIO TAB IN THE MODE BOX FOR THE WSJT-X SOFTWARE, THE RADIO MAY NEED TO BE SET TO THAT MODE TO PROPERLY CONNECT TO THE SOFTWARE [PASS FREQUENCY DATA, ETC] (EXAMPLE—“USB-D” FOR ICOM RADIOS).
6. WSJT MAIN WINDOW/RECEIVE WINDOWS:
- A. COLORS IN BAND-WIDE (LEFT) WINDOW—GREEN STATION =CALLING CQ, DEEP PURPLE= NEW DXCC COUNTRY. SEE 4.J ABOVE.
  - B. COLORS IN RECEIVE (RIGHT) WINDOW—YELLOW= ME CALLING, RED= STATION CALLING ME
  - C. LEFT SIDE OF BOTH WINDOWS SHOWS ACTUAL TIME SENT/RECEIVED IN UNIVERSAL TIME CONSTANT (UTC) HOURS/MINUTES/SECONDS (NOT LOCAL TIME).
  - D. “DT”= TIME DIFFERENCE FROM REFERENCE TIME, IF TOO FAR OFF MAY NOT BE DECODED PROPERLY. SEE WSJT-X WEBSITE FOR DETAILS.
  - E. “DB”= RECEIVED SIGNAL STRENGTH REFERENCED TO ZERO, “-25” IS VERY WEAK, A PLUS NUMBER “12” IS VERY STRONG.
7. WSJT-X USAGE OPTIONS:
- A. THE SOFTWARE OPERATES ON A 15 SECOND CYCLE—15 SECONDS TO RECEIVE AND 15 SECONDS TO TRANSMIT. THIS MEANS THERE IS A MINIMUM OF A 15 SECOND INTERVAL BETWEEN EACH RESPONSE. FREQUENTLY IT TAKE SEVERAL INTERVALS TO GET A RESPONSE FROM ANOTHER STATION.
  - B. THE WATERFALL WINDOW SHOWS APPROXIMATELY 2500 KHZ (MAX DEPENDING ON BAND)
    - 1. THE GREEN MARKER SHOWS YOUR RECEIVE FREQUENCY
    - 2. THE RED MARKER SHOWS YOUR TRANSMIT FREQUENCY
    - 3. NO ONE GENERALLY TRANSMITS IN THE FIRST 200 HZ SO “SET TO BEGIN AT 200”
  - C. WSJT HOME PAGE “MAIN” WINDOW:
    - 1. THE LEFT WINDOW SHOWS FT8 BAND ACTIVITY WINDOW

2. THE RIGHT WINDOW SHOWS A SPECIFIED RECEIVE FREQUENCY (SELECTED BY THE GREEN MARKER IN THE WATERFALL WINDOW OR BY CLICKING ON A STATION CALLING CQ).
  - D. THE “MONITOR” BUTTON IN THE MAIN WINDOW MUST BE SELECTED TO DISPLAY RECEIVED CALLS AND CALLSIGNS.
  - E. THE “ENABLE TRANSMIT” BUTTON IIN THE MAIN WINDOW MUST BE SELECTED TO TRANSMIT.
  - F. CLICK ON THE “TUNE” BUTTON IN THE MAIN WINDOW TO TUNE THE TRANSMITTER IN YOUR RADIO.
  - G. SELECT “AUTO SEQUENCE” IN THE MAIN WINDOW TO TRANSMIT THE TX 1-5 PRE-CANNED “TX” MESSAGES IN ORDER.
8. WSJT-X OPERATION:
- A. DOUBLE CLICK ON A STATION IN THE BAND ACTIVITY WINDOW TO CALL HIM.
  - B. YOU CAN ANSWER A STATION ON A SPIT/DIFFERENT FREQUENCY, HIS SOFTWARE WILL RECEIVE AND DECODE YOUR CALL WITHIN THE FT8 2500 KHZ BANDWIDTH.
  - C. TO CALL CQ, SELECT AN UNOCCUPIED FREQUENCY, PLACE THE “NEXT” DOT ADJACENT TO THE TX 6 WINDOW, CLICK ON THE” ENABLE TRANSMIT” BUTTON.
  - D. A STATION CAN ANSWER YOUR CQ ON ANOTHER FREQUENCY AND THE SOFTWARE WILL RECEIVE HIS CALL TO YOU (SPLIT OPERATION IS OK).
  - E. YOUR SOFTWARE WON’T CONTINUE TO CALL A STATION IF THE CALLED STATION ANSWERS ANOTHER CALLER (ONLY IF THE OTHER STATION ANSWERS ON THE CALLERS FREQUENCY).  
**NOTE:** TO CONTINUE CALLING WHILE YOUR DESIRED STATION IS IN QSO, USE THE SPLIT FREQUENCY MODE.
  - F. THE TX 5 TAB ALLOWS FOR SHORT (13 DIGITS) ADDED COMMENTS PRESET IN THE “TX MACROS” TAB ON THE CONFIGURATION MENU.
  - G. THE “73” AT THE END OF YOUR TX 5 MESSAGE ENDS THE CONTACT AND TRIGGERS THE LOG WINDOW.
  - H. IN THE BAND ACTIVITY AND RECEIVED WINDOWS, THE LEFT CALL SIGN IS BEING CALLED BY THE STATION CALLING ON THE RIGHT.
  - I. KEEP TRACK OF YOUR TRANSMIT AND RECEIVE FREQUENCIES—YOUR SOFTWARE MAY TRACK TO A CALL FROM A STATION CALLING YOU ON ANOTHER FREQUENCY.
  - J. YOU CAN SELECT THE “HOLD TRANSMIT” BUTTON TO KEEP YOUR TRANSMIT SIGNAL ON A CLEAR FREQUENCY.
  - K. DOUBLE CLICK ON THE CALL IN THE BAND ACTIVITY WINDOW TO GO TO THAT STATION’S FREQUENCY.
  - L. **DX TECHNIQUES: WHEN CALLING A *DX OR “RARE” STATION:***
    1. *YOU MAY HAVE BETTER SUCCESS CALLING ON A DIFFERENT FREQUENCY SINCE THERE MAY BE MANY STATIONS CALLING ON HIS FREQUENCY. YOU CAN DOUBLE CLICK THE TRANSMIT FREQUENCY SUB-WINDOW AND THEN TYPE IN A BETTER OR “CLEAR” FREQUENCY TO HAVE A BETTER CHANCE OF SUCCESS. SEE 8.B ABOVE.*
    2. *IF HAVING DIFFICULTY CONNECTING, YOU MAY WISH TO SWITCH TO THE OTHER TIME SLOTS. E.G. CHECK OR UNCHECK THE “TX/EVEN/1<sup>ST</sup> BOX. (0/30 VERSUS 15/45 SECONDS).*

- M. SINGLE CLICK THE "ERASE" BUTTON TO ERASE THE RECEIVE "RIGHT" WINDOW, DOUBLE CLICK TO ERASE BOTH WINDOWS (WHEN CHANGING BANDS ETC)
- N. WHEN CALLING CQ, IF YOU FIRST CLICK ON "CALL 1<sup>ST</sup>", IN THE MAIN WINDOW, THE SOFTWARE WILL AUTOMATICALLY ANSWER THE FIRST CALL RECEIVED AND COMPLETE THE TX MESSAGES & QSO. YOU STILL NEED TO MANUALLY SAVE THE LOG ENTRY.
- O. TO CLEAR A CALLSIGN FROM THE TX MESSAGES AFTER AN UNSUCCESSFUL CALL, CLICK ON "HALT TX" AND THEN DOUBLE CLICK ON THE NEW STATION'S CALL SIGN IN THE BAND ACTIVITY WINDOW.
- P. **DXPEDITION MODE** IS ACTIVATED VIA THE "ADVANCED" TAB IN THE FILE--SETTINGS MENU. WE ARE THE "HOUND", ALSO SELECT "SPLIT OR WING IT" MODE IN THE RADIO TAB, SELECT "RECEIVE ALL FREQUENCIES" IN MAIN WINDOW,
- Q. THERE ARE NOW "**SPECIAL OPERATING ACTIVITY**" MODES FOR SOME CONTESTS (IE FIELD DAY) ALLOWING YOU TO PRE-DEFINE YOUR EXCHANGE MESSAGE. THERE WILL LIKELY BE ADDITIONAL MODES/CONTESTS ADDED.

By KOYY