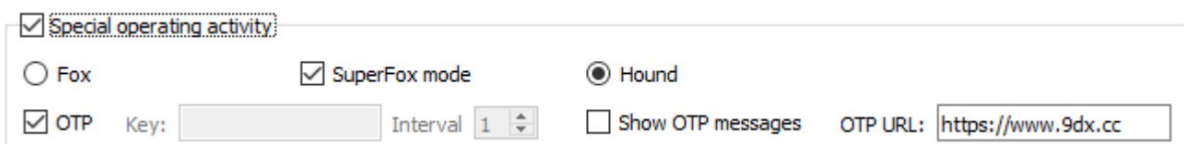# SuperFox User Guide

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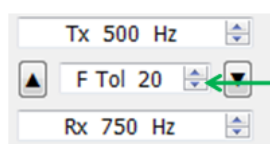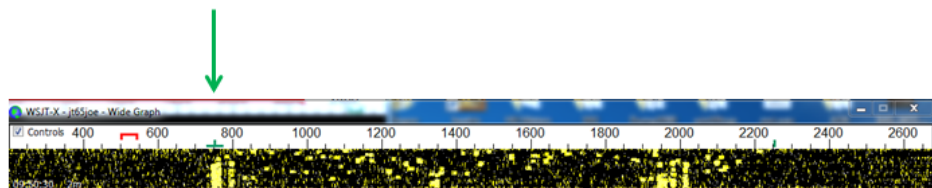
WSJT-X 2.7.0 includes **SuperFox** mode, a powerful new tool that helps DXpeditions make digital QSOs at very high rates. Rather than sending concurrent streams of up to five normal FT8 signals, each 50 Hz wide, the SuperFox station transmits a full power constant-envelope waveform, 1512 Hz wide, conveying signal reports or RR73 acknowledgments to as many as nine different Hounds simultaneously. There is no signal-strength penalty for simultaneously transmitting to the maximum number of Hounds. The transmissions also include a one-time password (OTP) that can be used by receiving software to verify SuperFox's legitimacy. Well-planned DXpeditions will use this facility to make sure that malicious pirate transmissions are recognized as such. Hounds chasing the DX station transmit normal FT8 signals, as in the original Fox-and-Hound mode. SuperFox will not make robotic QSOs.

Hound Operation: To copy and work a SuperFox station, go to **File | Settings | Advanced**, check the boxes **Special operating activity**, **SuperFox mode**, and **OTP**, and select **Hound:**

 With these settings WSJT-X will decode SuperFox transmissions in even reception intervals (those starting at 00 and 30 seconds of a UTC minute) and normal FT8 signals in odd intervals. The main-window controls **F Tol** and **Rx nnn Hz** work as in other modes. The lowest tone of a SuperFox signal is transmitted at 750 Hz, so you should normally set the green marker on the waterfall scale close to this frequency. The decoder will respond to SuperFox signals in a range ± **F Tol** around the selected lowest-tone frequency.

Position green cursor to 750Hz, or centre it on lowest tone

Signal will decode only when lowest tone falls within the width of the green cursor, as determined by the F Tol setting. In cases where QRM or birdies are present, it may be beneficial to use a lower setting for F Tol. If the signal drifts, it will be necessary to re-centre the green cursor on the lowest tone.

After decoding a SuperFox transmission, Hounds may call by double-clicking on the Fox callsign. Transmit anywhere in the audio frequency range 200 to 3000 Hz (or as specified by

the SuperFox station, up to a maximum range 200 to 5000 Hz). Note that you are not forced to transmit above 1000 Hz, and your frequency is not automatically shifted after you are called by SuperFox. The entire QSO is conducted at your original calling frequency. To prevent Hounds from generating QRM when no chance of a QSO is possible, Hounds can call Superfox only after they have decoded a signal from SuperFox. If SuperFox is using a compound callsign and is initially decoded with only the base callsign, you may edit the **DX Call** entry field to the compound callsign after double-clicking on the decoded message.

All parts of decoded SuperFox messages will appear in the left (Band Activity) panel, while messages addressed to you are also displayed in the right (Rx Frequency) panel. The decoder tests the OTP included in each message; if valid at the time of transmission, the SuperFox callsign will be marked "verified" as shown here:

Automatic verification of SuperFox's legitimacy is accomplished by sending the received OTP to a dedicated server. If it matches the expected value, the "callsign verified" message is displayed as shown. Note that real-time verification requires the receiving computer to have internet access, and the OpenSSL libraries must be installed in the Hound's computer.

As an alternative, you can check the box **Show OTP messages** to display the received OTP values, and at some later time verify that it was valid by entering callsign, date, and time into a browser URL as in the following example: https://www.9dx.cc/check/DL3WDG/2024-12-22T16:54:30Z. In the example below DG2YCB had **Show OTP** checked, leading to the displayed line `$VERIFY$ DL3WDG 687863` after the CQ message, as well as the normal message `DL3WDG verified`.

SuperFox Operation: To operate as SuperFox, go to **File | Settings | Advanced**, check the boxes **Special operating activity**, **SuperFox mode**, and **OTP**, and select **Fox.** If you have a valid SuperFox key, enter the key as in this example:

Authorized keys will be issued in advance for approved DXpeditions by the Northern California DX Foundation, and these keys will also be made known to the default SuperFox

server at URL https://www.9dx.cc. Requests for SuperFox keys can be made at the NCDXF website, https://ncdxf.org.

Standard messages from SuperFox may include up to 9 Hound callsigns. As many as four Hounds receive numerical signal reports to start a QSO, and the remainder receive RR73 to acknowledge that a QSO has been logged. If you check the **More CQs** box (see below), any SuperFox message will also include a CQ. Stand-alone CQ messages may include a free text message — perhaps some instructions for calling stations — and free text may also accompany a message with up to four Hound callsigns and either signal reports or RR73's. To send a text message, click the **Free Text** button, enter your desired message (up to 26 characters), and check the **Send msg** box as in this example. Use your own message, of course.