

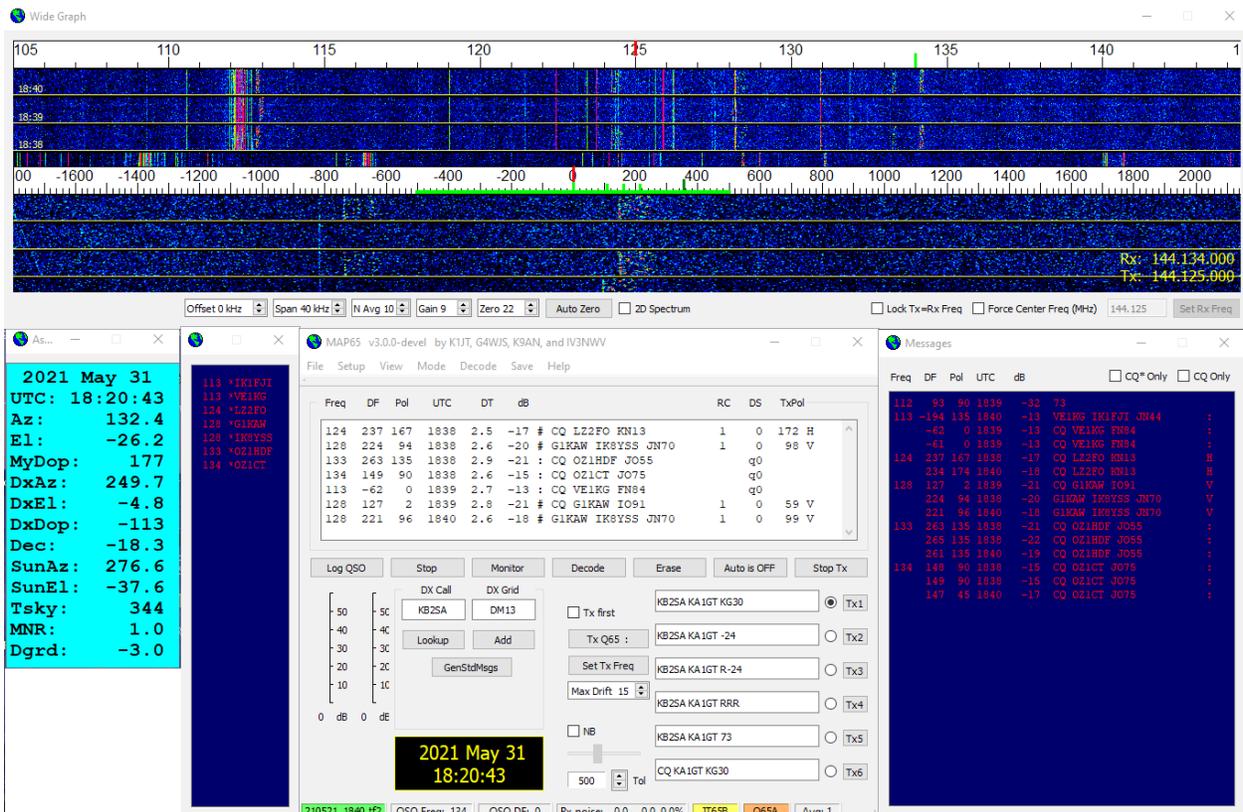
# Quick-Start Guide to *WSJT-X 2.5.0* and *MAP65 3.0*

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*WSJT-X 2.5.0* offers automatic compensation for linear frequency drifts of Q65 signals, and installing it on Windows automatically includes the program *MAP65 3.0*. Used with suitable RF hardware, *MAP65* provides wideband (up to 90 kHz) reception of Q65 and JT65 signals with optional adaptive polarization. *MAP65 3.0* is similar to earlier versions but has full support of the new protocol Q65, replacing the deprecated QRA64. Other features of *WSJT-X* and *MAP65* remain as in earlier versions.

**Installation:** *MAP65* keeps its log and various other files in the directory from which it is executed. Therefore, if you wish to use *MAP65* be sure to install the package to a directory where you have write permission: for example C:\WSJT-X. For convenient startup you will probably want to create desktop shortcuts for the files C:\WSJT-X\bin\wsjtx.exe and C:\WSJT-X\bin\map65.exe. Be sure that the shortcut for *MAP65* has its “Start in” directory set to the directory containing map65.exe. When you first start *MAP65*, be sure to enter suitable paths for the **Save Directory** and **AzEl Directory** on the **Setup | Options | Station** tab.

**MAP65 Operation:** *MAP65* supports only 60-second T/R sequences. Select active submodes for Q65 and JT65 from the **Mode** menu. We recommend using Q65-60A for EME at 50 and 144 MHz, Q65-60B at 432 MHz, Q65-60C at 1296 MHz, and Q65-60D at 10 GHz. Your Tx mode (Q65 or JT65) is determined by the status of a button just below the **Tx first** checkbox. Decoded messages in the main window are flagged with a special mode-dependent character, # for JT65 and : for Q65. The screen shot below shows reception of nine EME signals in Q65-60A and three in JT65B, decoded from three successive Rx sequences.



It's easy to distinguish between Q65 and JT65 signals on the waterfall. The Q65 sync tone is somewhat less prominent, and the bandwidth of a Q65-60A signal is only 108 Hz — less than 1/3 the bandwidth of a JT65B signal. Q65 messages use numerical signal reports and do not use two-tone shorthands for RO, RRR, and 73.

**Drift Compensation:** A Q65 user control **Max Drift** appears on the main windows of both *WSJT-X* and *MAP65*. The Q65 decoder measures and compensates for signal drift up to (symbol rate) × (**Max Drift**) per transmission. The Q65-60x submodes have symbol rate 1.667 Hz, so setting **Max Drift** to 15 accommodates drifts up to 25 Hz per transmission. Similarly, Q65-15x submodes have symbol rate 6.667 Hz, so **Max Drift** = 40 accommodates drifts up to 267 Hz per transmission (as might be required for 10 GHz aircraft scatter). It's best to keep **Max Drift** set to 0 unless drift compensation is actually required, and otherwise set it no higher than necessary. Drift compensation is active in *MAP65* only for signals within ± **FTol** of the selected QSO frequency.

**Soundcard drivers:** If you have a dual polarization (Xpol) system and used ASIO soundcard drivers with *MAP65* 2.7, use the WDM/KS drivers with *MAP65* 3.0.

**FUNcube Dongle:** With the original FUNcube Dongle, install the dongle control program into the *MAP65* bin directory. Use the first download listed here:

<https://sourceforge.net/projects/qthid/files/3.0/> and extract the whole archive into the bin directory. With the FUNcube Pro+, install the control program from here:

<http://www.funcubedongle.com/MyImages/FCHid2.002.zip> You might want to write a simple batch file called qthid.bat in the bin directory so that FCHID2.002.exe can be launched from the *MAP65* menu.

**IQ+:** The PE0FKO libusb-w32 driver is obsolete and incompatible with the latest USB library. To upgrade your driver without losing compatibility with applications using older USB libraries, download the Zadig tool from <https://zadig.akeo.ie/>, run the tool, scan for all appropriate USB devices (check the **Menu | Options | List All Devices** option), select the device called DG8SAQ-I2C from the top drop-down list, then with libusbK listed as the replacement driver to right of the green arrow, double-click the **Replace driver** button. After a few seconds the driver will be replaced. Quit the utility and you are done. Upgrading in this way should allow direct control of the IQ+ from *MAP65* and also via Linrad running on Windows.

**Testing and Reporting:** Release candidates of *WSJT-X* 2.5.0 and *MAP65* 3.0 are intended for beta testers willing to provide feedback to the developers. Please do your testing with **Save all** enabled, so that recorded \*.wav, \*.iq, and \*.tf2 files can be sent to us for testing purposes. The .iq and .tf2 files are large – nearly 20 and 40 MB each, respectively – but you can always delete unwanted ones later. We consider Q65 to be the best digital mode for EME, tropospheric scatter, rain scatter, ionospheric scatter, aircraft scatter, and TEP on VHF and higher bands, as well as other types of fast-fading signals. We are especially interested in optimizing Q65 performance for all of these propagation modes, in both *WSJT-X* and *MAP65*. Please promote the use of Q65 for EME on all bands, encouraging others to switch from JT65 to Q65. If you find program bugs, be sure to tell us any relevant details of your setup, and if possible provide a complete recipe for reproducing the problem.

**Future Development:** As always, we welcome suggestions for improvements in the way *WSJT-X* and *MAP65* operate. Please note, however, that we do not currently envision large changes or additions to *MAP65* capabilities. Instead, we plan to implement the most important *MAP65* capabilities in *WSJT-X*, including wideband reception with polarization diversity.

