HOW TO PROGRAM A RADIO WITH CHIRP SOFTWARE

1.0 SCOPE
These instructions for programming channelized VHF and/or UHF amateur radio transceivers and related equipment apply to computers using the Windows operating system and CHIRP software. Other computers may have similar but slightly different instructions.

Chirp software from danplanet.com is totally free to use and compares favorably to proprietary $oftware from RT Systems and the free software from the various radio manufacturers. Commands and displays may differ between the various sources of programming software.

Before programming any radio, collect the frequency data for any desired repeater including frequency to receive, offset in frequency to transmit, and any sub-audible tone to activate the repeater. This data can be obtained from the ARRL repeater guide, from the RepeaterBook smart phone app, from RadioReference.com, or from local ham radio club web pages. Another good source for repeater frequencies in Northern California is **www.narcc.org**.
 Also collect any simplex frequencies in use nationally or locally.

 Unless otherwise specified, click means press once on the left button of the computer mouse, trackball, or touch pad.

2. SOFTWARE
2.1 The first thing you have to do is to download the Chirp software. Using an Internet browser, search for "Chirp Software". You might find a listing such as https://chirpmyradio.com/projects/chirp/wiki/Home#google_vignette, click on that.. Then click on Download and then "Download the latest CHIRP-next build here". DO NOT CLICK ON on Start Download or similar ads unless you have a specific need for the advertised product.

2.2 The resulting file should be located in a "Downloads" folder on your computer. Different Windows versions may have different locations for that folder. The file will usually have a file name such as "chirp-daily-(a date code)-installer.exe".

2.3 From the downloaded location, double left-click on the file. That will install the actual software, usually in a "C:\Program Files or C:\Program Files(x86)" folder in a "CHIRP" subfolder. From that subfolder, locate "chirpwx.exe" You may wish to install a Desktop shortcut for that file. Right click on the .exe file and select "New Shortcut". Paste the file location and "Chirp" in the designated windows. Drag and move the shortcut to where you wish.

3. CABLE
   3.1 Examine the specific programming cable for the radio that you are
       programming. Every radio manufacturer seems to use a different type
       of radio connector and possibly other voltage and timing requirements
       for programming although there is some sharing of specifications.

   3.2 If the older computer you are using has a DE-9P COM port connector
       and your cable has a matching DE-9S connector you are good to go
       using COM1 and go to Section 4.0 of this document. Otherwise your
       programming cable should have a USB type A connector on the
       computer end and either a DE-9S or a radio specific connector on the
       other end. With the computer running, plug the USB connector into an
       available USB port on the computer.

   3.3 If the cable has FTDI driver chips in it, the computer may recognize it
       and assign a COM port number to it. If the cable has other
       manufacturer's driver chips in it, the computer may not recognize it. In
       that case unplug the cable from the computer and run the program on
       the mini-CD provided with the cable first, then plug the cable in again.

   3.4 If you wish to see the assigned COM port number, locate the Control
       Panel or Device Manager window and scroll down to see that status of
       COM and LPT ports. Note if you later plug the USB connector from
       the programming cable into a different USB port on the computer, a
       different COM port number may be assigned. This will be significant
       when programming the radio.

4.0 OPERATIONS
   4.1 With the computer running and the radio turned off, double left-click on
       the Chirp shortcut on the computer desktop. If a previous file for the
       same model radio is present in the computer, click on File in the upper
       left corner of the screen and then search for and Open the file.
       Go to section 5.0 of this document.

   4.2 If this to be a new programming effort for this model radio, click on
       Radio in the upper left corner of the screen. Select the manufacturer
       and model number of the radio you intend to program. Not all
       models may be identified. That is particularly true of Baofang and
       Wouxun but may be so for others. In that case, try to select a model
       that has the same band capability and number of channels.

   4.3 Plug the programming cable into the radio programming jack and turn
       the radio on. If programming a Yaseu radio, put the radio in Clone
       mode. Select a COM port on the model window for programming as
       determined in section 3.4 of this docment.

4.4 Select Download from Radio on the computer screen. If the Model number and the COM numbers match with the radio, the computer should show Cloning. Some LEDs on the radio may flash while the data is being transferred.

4.5   When the cloning process is complete, a spread sheet of previously entered data should be presented. If this the first time that user data is to be entered, the screen may show factory test frequencies. Generally select and clear all factory data. Go to section 5.0 of this document.

5.O PROGRAMMING

Whether entered from a file previously saved from a previous programmed radio
of the same model or downloaded from a programmed radio, the display should
present a spread sheet view of the programmed data. A partial view of sample
programming is shown below:

Location	Name	Frequency	Duplex	Offset	Tone	rToneFreq	cToneFreq	DtcsCode	DtcsPolarity	Mode
0	CALL	146.565		0	Tone	103.5	88.5	23	NN	FM
1	WILITS	145.130	-	0.6	Tone	103.5	88.5	23	NN	FM
2	WIN	147.120	+	0.6	Tone	103.5	88.5	23	NN	FM
3	LAUGHN	147.390	+	0.6	Tone	103.5	88.5	23	NN	FM
4	CAHTO	145.430	-	0.6	Tone	103.5	88.5	23	NN	FM
5	SANEL	145.470	-	0.6	Tone	103.5	88.5	23	NN	FM
6	FSHRCK	147.270	+	0.6	Tone	114.8	88.5	23	NN	FM
7	HUNTER	147.675	-	0.6	Tone	103.5	88.5	23	NN	FM
8	ANTONY	147.210	+	0.6	Tone	103.5	88.5	23	NN	FM
9	MENDO	146.820	-	0.6	Tone	103.5	88.5	23	NN	FM
10	FTBRAG	147.030	+	0.6	Tone	103.5	88.5	23	NN	FM
11	KONOCT	146.775	-	0.6	Tone	103.5	88.5	23	NN	FM
12	CAHTO2	146.655	-	0.6	Tone	103.5	88.5	23	NN	FM
13	NWIDE	146.520		0	Tone	103.5	88.5	23	NN	FM
14	WILITS	146.445		0	Tone	103.5	88.5	23	NN	FM
15	BKTRLS	146.580		0	Tone	103.5	88.5	23	NN	FM
16	UKIAH	146.490		0	Tone	103.5	88.5	23	NN	FM
17	LYTVLE	146.535		0	Tone	103.5	88.5	23	NN	FM

Location is the channel number. Name is the displayed name, usually 6 letters
maxium, Frequency is the receive frequency. Duplex indicates the direction in
frequency that the transmit frequency is moved by the Offset value in MHz. As a
general rule, the offset for 2m repeaters is 0.600 while the offset for 1.25m
repeaters is 1.600 and for 70 cm repeaters the offset is 5.000. There are
exceptions.

For all public safety and aircraft frequencies, the duplex value should be "off"

Tone is a selection of the sub-audible to be sent to the repeater (rToneFreq) or
received from the repeater to un-squelch the radio (cToneFreq). Values are
Tone, Tsch, or blank for no tone.

Unless activated for a particular repeater sysytem, the DtcsCode and
DtcsPolarity values may be left in their default values, 23 and NN respectively.

The mode values for all amateur transmissions should be FM. The mode values
for all public safety frequencies should be NFM while the Mode values for all
Aircraft frequencies should be AM.

Enter whatever is appropriate for your radio. Delete or clear whatever is not needed for this radio. It is OK to leave channel (Location) numbers blank. These will simply be skipped in the radio display.

It is suggested to program frequencies in groups. Perhaps 2m repeaters in one group and 2m simplex frequencies in another group. 70cm repeaters may be in another group. Depending on the number of channels in the radio being programmed, perhaps local Fire frequencies and local Police frequencies in still other groups. If each group is started with a number ending in 0 (e.g 20, 30, 40 or even by 200, 300, 400 etc) it can be easy to find such a group.

Many transceivers offer a Power Up message in text letters. Some even offer two such messages. To program those go to Messages on the upper left corner of the Chirp screen and scroll down to find the Power Up message or messages. Choose the operator name or call sign.

When you are done editing, save the file with a name that you will recognize later, It is suggested that you also export the file as a csv file that you can see and even print for interest.

Many radios accept the data as entered while others require being in Clone mode.

Whichever your radio requires, click on Upload to Radio in the upper left corner of the Chirp screen. If the model number and COM port number still match, you should see the clone operation on the screen and some LEDs may flash on the radio.

When all of this is done, you may close Chirp, turn off the radio, and remove the programming cable.

Test your radio !

73,
W6FQX, John