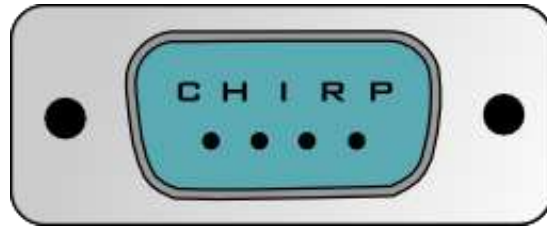


# CHIRP Ham Radio Programming Software



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KG7IGS

El Presidente, SPARC

[http://chirp.danplanet.com/projects/  
chirp/wiki/Home](http://chirp.danplanet.com/projects/chirp/wiki/Home)

## **Supported File Formats**

- Comma Separated Values (.csv)
- Comma Separated Values generated by RT Systems (.csv)
- [EVE](#) for Yaesu VX-5 (.eve)
- Kenwood HMK format (.hmk)
- Kenwood commercial ITM format (.itm)
- Icom Data Files (.icf)
- ARRL TravelPlus (.tpe)
- [VX5 Commander](#) Files (.vx5)
- [VX7 Commander](#) Files (.vx7)

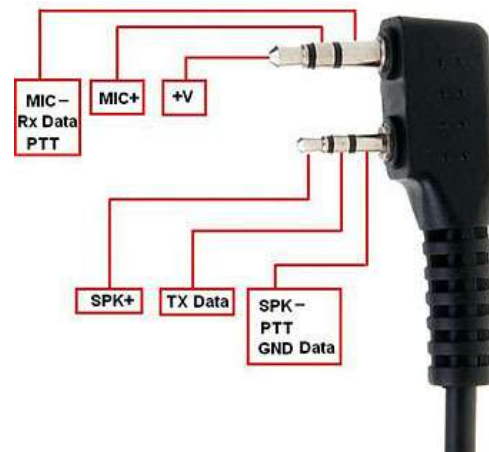
# Supported Radio Models



- **AnyTone**
  - AT-5888UV
  - *Also includes the Intek HR-2040*
  - *Also includes the Polmar DB-50M*
  - *Also includes the Powerwerx DB-750*
- **Alinco**
  - DR-03T
  - DR-06T
  - DR135T
  - DR235T
  - DR435T
  - DJ596T
  - DJ175T
- **Baofeng/Pofung**
  - F-11 (*in daily builds*)
  - UV-3R
  - UV-5R [and variants](#) (*in daily builds*)
  - UV-6 (*in daily builds*)
  - UV-82/82L/82X (*in daily builds*)
  - *Also includes the GT-5*
  - UV-82C (*in daily builds*)
  - UV-82HP/82DX/82HX (*in daily builds*)
  - UV-B5/B6
  - *Also includes the BF-V85*
- BF-666S/777S/888S
  - *Also includes the GT-1*
  - BF-F8HP (*in daily builds*)
  - *Also includes the BF-A58*
  - *Also includes the BF-F9V2+*
  - *Also includes the GT-3TP*
  - *Also includes the UV-5RTP*
  - *Also includes the UV-5R7W*
- **Baojie**
  - BJ-UV55
  - BJ-9900 (*in daily builds*)
- **Feidaxin**
  - (*in daily builds*) FD-150A
  - FD-160A
  - FD-268A
  - FD-268B
  - FD-288A
  - FD-288B
  - FD-450A
  - FD-460A
- **Icom**
  - IC-80AD
  - IC-2820H
  - ID-800H
  - ID-880H
- IC-208H
- IC-2200H
- IC-91/92AD
- IC-V/U82
- ID-RPx000V/RP2x
- IC-2100H
- IC-2720H
- IC-T70
- IC-T7H
- IC-T8A
- IC-Q7A
- IC-W32A
- IC-746
- IC-7200
- IC-7000
- ID-31A
- ID-51A
- **Intek**
  - KT-980HP (*in daily builds*)
- **Jetstream**
  - JT220M
  - JT270M (*in daily builds*)
- **Kenwood**
  - TH-D7A/G
  - TH-D72
  - TH-F6A
  - TH-F7E
  - TH-G71A
  - TH-K2
  - TK-260/270/272/278
  - TK-260G/270G/272G/278G
  - TK-360/370/372/378
  - TK-760/762/768
  - TK-760G/762G/768G
  - TK-860/862/868
  - TK-860G/862G/868G
  - TK-7102/8102/7108/8108
  - TM-271A
  - TM-281A
  - TM-D700
  - TM-D710
  - TM-G707
  - TM-V7A
  - TM-V71A
- **KYD**
  - NC-630A
- **Leixen**
  - VV-898 (*in daily builds*)
- **Puxing**
  - PX-2R (UHF)
  - PX-777
- **Retevis**
  - H-777 (use Baofeng BF-888)
  - RT-B6 (use Baofeng UV-B5)
- **Sainsonic**
  - AP510 20141215 firmware (*in daily builds*)
- **TYT**
  - TH-UV3R
  - TH-UVF1
  - TH-9000 (*in daily builds*)
  - TH-9800 (*in daily builds*)
- **Yaesu**
  - FT-1D (*in daily builds*)
  - FT-60R
  - FT-90R
  - FT-817/ND
  - FT-857/D
  - FT-897
  - FT-1802M
  - FT-2800M
  - FT-1900R/2900M (*in daily builds*)
  - FT-7800R/7900R
  - FT-8800R
  - FT-8900R
  - FTM-350R
- VX-170 (*in daily builds*)
- VX-2R
- VX-3R
- VX-5R
- VX-6R
- VX-7R
- VX-8R
- **Wouxun**
  - KG-UVD1P/UV2D/UV3D
  - KG-UV6D/UV6X
  - KG-UV8D

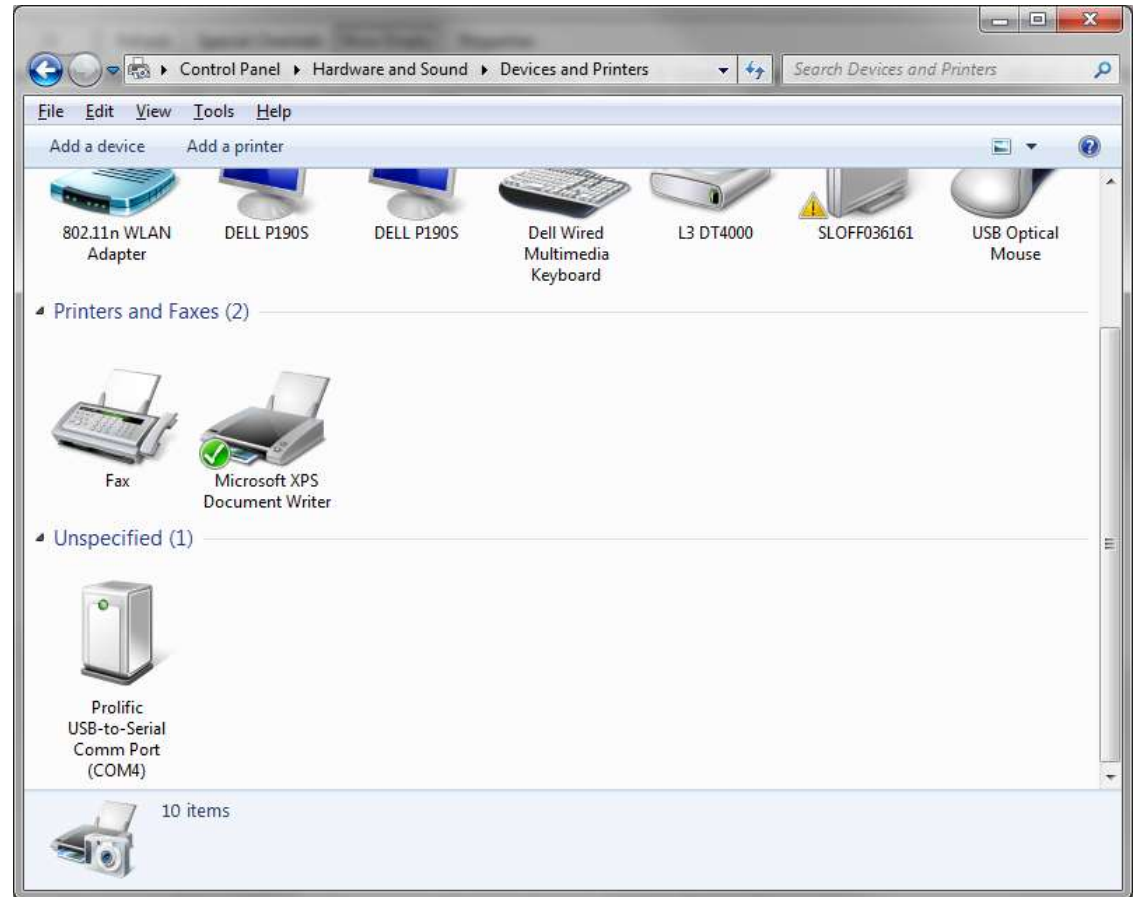
# Required Hardware

- You'll need a PC, MAC, or Ubuntu Linux based PC to run CHIRP
- You'll also need a USB programming cable. They are branded with several names, but are generally all cross compatible:



- Verify the USB programming cable is connected, the driver is working, and the device shows up in device manager (indicating which serial port you need to look for it on: In this case COM4)

# PC Setup



# Beginners Guide

- **Note** that .csv and .chirp files may also be opened and edited directly, but you will not be able to upload directly from those file types to any of the radios.
  - You must always download from a radio (or open an image of it) first and then Import the contents of your CSV or .chirp file into chirp before uploading.

# Before you begin...

- Before you begin to use CHIRP with your radio, it is important to understand the two different modes of operation. Each radio falls into one of two categories:

Mode	Behavior
Clone	The radio's memories are downloaded or uploaded all at once in a single clone operation. You can download an image of this type of radio, which includes all settings, including memories, VFO state, etc. The radio enters (or must be put into) a special mode of operation while communicating with the PC and is typically power cycled after completion of a transfer. Changes to the memories are made against a saved image, and then are uploaded to the radio.
Live	The radio remains on and active during communication with the computer. Memories are transferred one at a time from the radio to the computer or from the computer to the radio. Changes to memories are made in real time against the radio as they are entered by the user. An image of this type of radio cannot be saved to disk in the same way that a clone-mode radio can. If you want to store the memories in a file, you must export them to a CSV or .chirp file.

# Chirp Interface

CHIRP

File Edit View Radio Help

Generic CSV: Untitled.csv

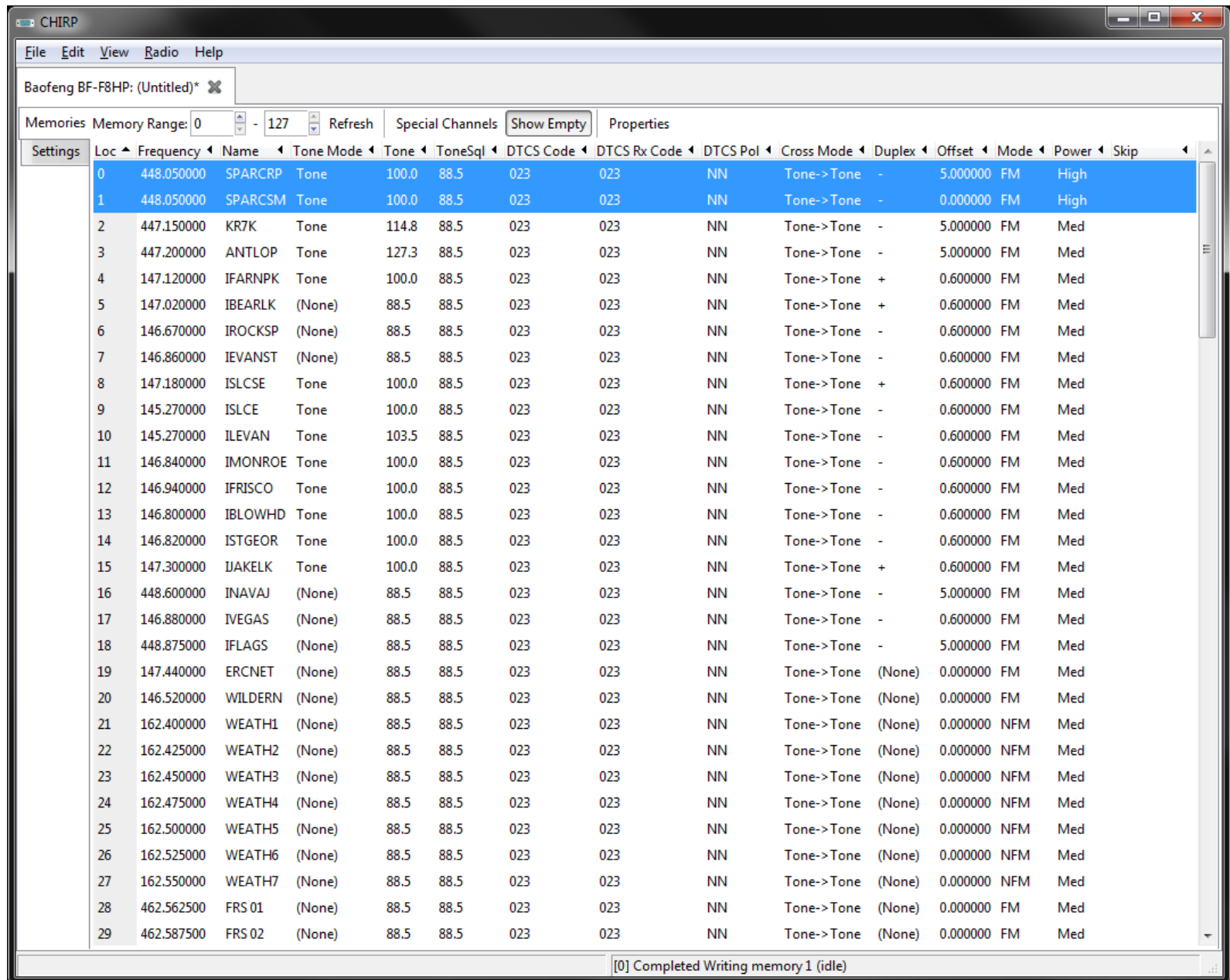
Memories Memory Range: 0 - 25 Refresh Special Channels Show Empty Properties

D-STAR	Loc	Frequency	Name	Tone Mode	Tone	ToneSql	DTCS Code	DTCS Pol	Duplex	Offset	Mode	Tune Step	Skip	Comment	URCALL	RPT1CALL	R
	0	146.010000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	1	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	2	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	3	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	4	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	5	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	6	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	7	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	8	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	9	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	10	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	11	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	12	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	13	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	14	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	15	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	16	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	17	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	18	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	19	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	20	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	21	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	22	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	23	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	24	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	25	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					

[0] Completed Getting memory 25 (idle)



# Upon importing from a programmed radio you'll see:



The screenshot shows the CHIRP software window with the title "Baofeng BF-F8HP: (Untitled)\*". The menu bar includes File, Edit, View, Radio, and Help. Below the menu bar, there are controls for "Memories" (Memory Range: 0 to 127, Refresh button, Special Channels button, Show Empty button, Properties button). The main area displays a table of radio memories with columns: Settings, Loc, Frequency, Name, Tone Mode, Tone, ToneSql, DTCS Code, DTCS Rx Code, DTCS Pol, Cross Mode, Duplex, Offset, Mode, Power, and Skip. The table contains 29 rows of data, each representing a programmed memory. The status bar at the bottom indicates "[0] Completed Writing memory 1 (idle)".

Settings	Loc	Frequency	Name	Tone Mode	Tone	ToneSql	DTCS Code	DTCS Rx Code	DTCS Pol	Cross Mode	Duplex	Offset	Mode	Power	Skip
	0	448.050000	SPARCRP	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	5.000000	FM	High	
	1	448.050000	SPARCSM	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.000000	FM	High	
	2	447.150000	KR7K	Tone	114.8	88.5	023	023	NN	Tone->Tone	-	5.000000	FM	Med	
	3	447.200000	ANTLOP	Tone	127.3	88.5	023	023	NN	Tone->Tone	-	5.000000	FM	Med	
	4	147.120000	IFARNPK	Tone	100.0	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	5	147.020000	IBEARLK	(None)	88.5	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	6	146.670000	IROCKSP	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	7	146.860000	IEVANST	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	8	147.180000	ISLCSE	Tone	100.0	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	9	145.270000	ISLCE	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	10	145.270000	ILEVAN	Tone	103.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	11	146.840000	IMONROE	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	12	146.940000	IFRISCO	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	13	146.800000	IBLOWHD	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	14	146.820000	ISTGEOR	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	15	147.300000	IJAKELK	Tone	100.0	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	16	448.600000	INAVAJ	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	5.000000	FM	Med	
	17	146.880000	IVEGAS	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	18	448.875000	IFLAGS	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	5.000000	FM	Med	
	19	147.440000	ERCNET	(None)	88.5	88.5	023	023	NN	Tone->Tone	(None)	0.000000	FM	Med	
	20	146.520000	WILDERN	(None)	88.5	88.5	023	023	NN	Tone->Tone	(None)	0.000000	FM	Med	
	21	162.400000	WEATH1	(None)	88.5	88.5	023	023	NN	Tone->Tone	(None)	0.000000	NFM	Med	
	22	162.425000	WEATH2	(None)	88.5	88.5	023	023	NN	Tone->Tone	(None)	0.000000	NFM	Med	
	23	162.450000	WEATH3	(None)	88.5	88.5	023	023	NN	Tone->Tone	(None)	0.000000	NFM	Med	
	24	162.475000	WEATH4	(None)	88.5	88.5	023	023	NN	Tone->Tone	(None)	0.000000	NFM	Med	
	25	162.500000	WEATH5	(None)	88.5	88.5	023	023	NN	Tone->Tone	(None)	0.000000	NFM	Med	
	26	162.525000	WEATH6	(None)	88.5	88.5	023	023	NN	Tone->Tone	(None)	0.000000	NFM	Med	
	27	162.550000	WEATH7	(None)	88.5	88.5	023	023	NN	Tone->Tone	(None)	0.000000	NFM	Med	
	28	462.562500	FRS 01	(None)	88.5	88.5	023	023	NN	Tone->Tone	(None)	0.000000	FM	Med	
	29	462.587500	FRS 02	(None)	88.5	88.5	023	023	NN	Tone->Tone	(None)	0.000000	FM	Med	

[0] Completed Writing memory 1 (idle)

# Most radios have 127 presets:

CHIRP

File Edit View Radio Help

Baofeng BF-F8HP: (Untitled)\*

Memories Memory Range: 0 - 127 Refresh Special Channels Show Empty Properties

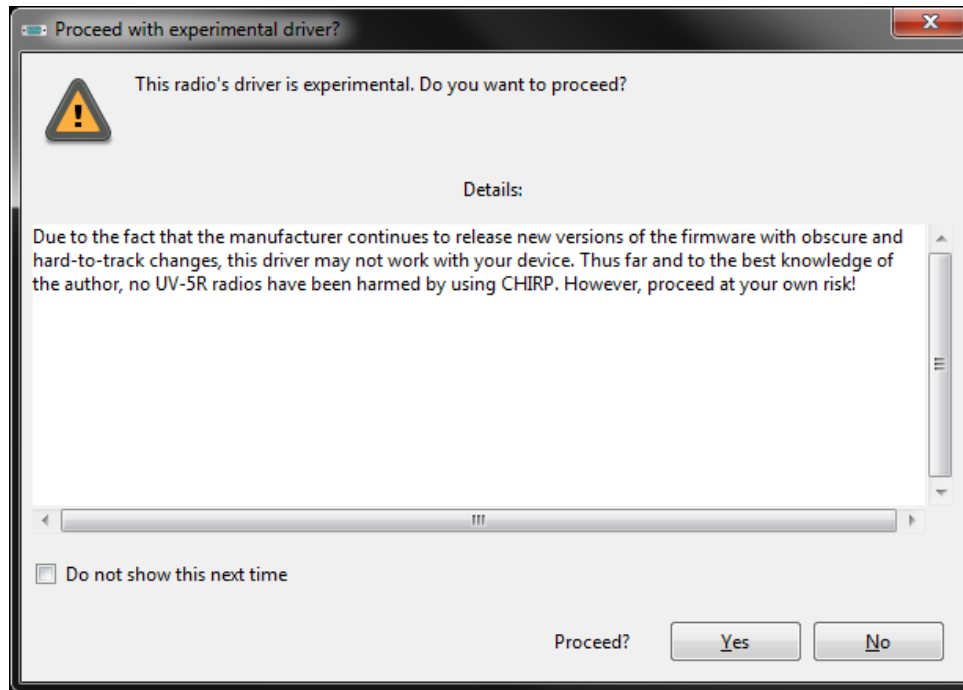
Settings	Loc	Frequency	Name	Tone Mode	Tone	ToneSql	DTCS Code	DTCS Rx Code	DTCS Pol	Cross Mode	Duplex	Offset	Mode	Power	Skip
	98	146.680000	HUNSVL	Tone	123.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	99	146.700000	ENSGN	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	100	146.700000	STGEOR	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	101	146.720000	SPENCR	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	102	146.740000	SLC U	Tone	114.8	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	103	146.760000	IRONMT	Tone	123.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	104	146.760000	MOAB	Tone	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	105	146.800000	LAVA	Tone	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	106	146.840000	SLC HP	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	107	146.860000	RICHEL	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	108	146.880000	SLC	Tone	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	109	146.900000	MOAB	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	110	146.910000	STGEOR	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	111	146.960000	PAGENM	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	112	146.980000	N7KM	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	113	146.980000	TOOELE	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	114	147.040000	ANTELO	Tone	123.0	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	115	147.060000	CEDAR	(None)	88.5	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	116	147.060000	SLC SC	(None)	88.5	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	117	147.080000	ELLEN	Tone	136.5	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	118	147.080000	LC OX	Tone	77.0	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	119	147.100000	CTRLUT	Tone	100.0	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	120	147.160000	PANGCH	Tone	100.0	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	121	147.160000	ENSGN	Tone	127.3	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	122	147.260000	STGEOR	(None)	88.5	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	123	147.300000	BOUNT	Tone	123.0	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	124	147.300000	S MOUN	Tone	100.0	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	125	147.360000	KANAB	Tone	100.0	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	126	147.380000	SLC PK	(None)	88.5	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	127	0.000000		(None)	88.5	88.5	023	023	NN	Tone->Tone	(None)	0.600000	FM		

[0] Completed Writing memory 1 (idle)

# Basic Procedure for Programming

## Step 1: Download contents from the radio

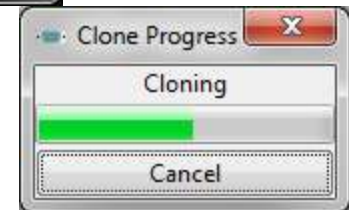
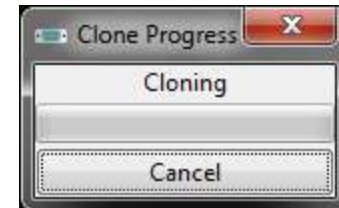
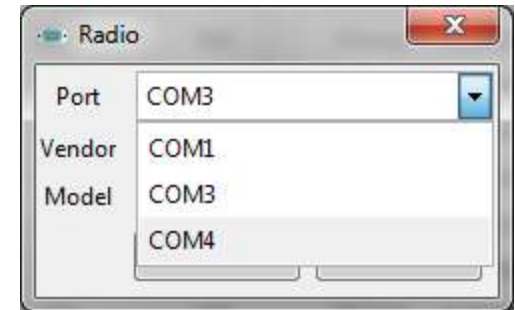
- ❖ Start CHIRP and Click the Radio menu and choose “Download From Radio”.
- ❖ There will be a series of prompts



# Basic Procedure for Programming

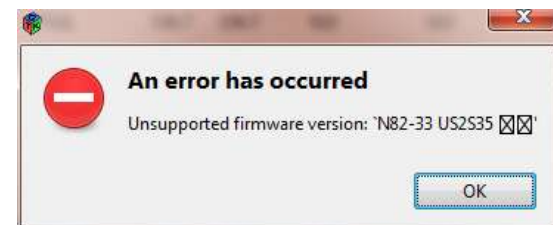
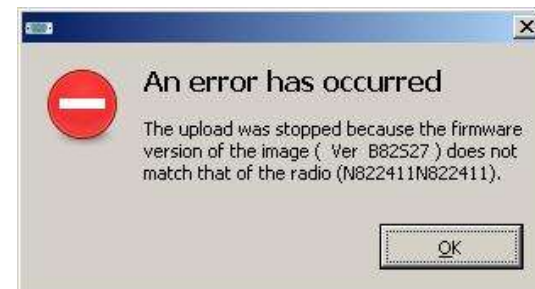
## Step 1: Download contents from the radio

1. Select the serial port you intend to use from the drop down menu
2. Select the correct Vendor and (if necessary) the appropriate Model
3. Click OK to start the download process.
  - I. Clone-mode radios will display a progress bar indicating how much of the image has been downloaded.
  - II. Live-mode radios will immediately jump to the memory editor and begin to populate it with memories as they are downloaded from the radio.



# Note about Common Errors:

- Unable To Communicate: Check that radio is powered on and USB connector is firmly seated
- Incorrect 'Model' selected, go back and select a different model number
- Incorrect Firmware: This means you cannot make a direct clone of two radios, but will have to import from the source radio, then copy values over to the destination radio.
- Unsupported Firmware: Your radio isn't supported at this time. Double check the list of supported radios, request support from CHIRP



# Note about Yaesu Radios

- There are series of additional steps that must be followed in order for Yaesu radios to be properly cloned:
- The above process is still accurate, but keep in mind the following:
  - Download Default Configuration: The radio should already be in clone-mode before clicking the OK button to initiate the download.
  - After clicking the OK button, you should press the button on your radio that initiates the clone transmission. This is usually indicated on the screen by *Clone TX* or similar.
  - Upload Configuration Changes: Like the download procedure, the upload procedure must follow a particular sequence. Make sure that your radio is already in clone mode and it is already waiting for an incoming clone transmission. This is usually indicated on the screen by *Clone Wait* or *Clone RX*.

# Basic Procedure for Programming



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- Cloning process has completed!
- **Step 2: Make changes**
- Once you have the radio contents displayed in the memory editor, you can proceed to make your changes. This may include manual edits or importing memories from other sources. If you are using a clone-mode radio, you may wish to save a .img file of your radio as a “before and after” you make your changes. Live mode radio users will have their changes immediately take effect in the radio and do not need to proceed to Step 3.
- **Step 3: Upload changes back to the radio (For clone-mode radios only!)**
- Once you have made all the edits you need to make, you should upload your image back to the radio. With your image open, go to the Radio menu and choose Upload To Radio. The Vendor and Model are already known, so all you need to do is choose a serial port.



# Other Operations



## Exporting To A Generic File

- If you wish to save memories from an existing radio out to a generic file that can be imported into other radios or edited by hand, use the Export function in the menu.
- Start CHIRP and download a temporary image from your source radio
- Use the “Export” function and choose a .csv or .chirp file format to save your radio's contents
- Choose some or all of the memories to export

## Importing From Another File

- If you have an image from another radio (even another type), you can import that into an image or live-mode radio using the Import function in the menu.
- Start CHIRP and download a temporary image of your target radio
- Use the Import function to choose a source file (CSV, CHIRP, .img, or .icf)
- Choose some or all of the memories to import
- Upload the changed image back to your target radio



# Understanding CHIRP's Columns

- The meaning of each column in the channel editor: In most cases, the default value for a column can be used if you don't know what the meaning of the column is.
- Users unfamiliar with programming radios are encouraged to:
  - Enable **Hide Unused Fields** mode in the **View** menu.
  - Also, enabling **Smart Tone Modes** in the same location can be rather helpful for reducing confusion.

## Understanding CHIRP's columns

Loc  
Frequency  
Name  
Tone Mode  
Tone  
ToneSql  
DTCS Code  
DTCS Rx Code  
DTCS Pol  
Duplex  
Offset  
Mode  
Tune Step  
Skip  
Cross Mode

# Memory Tab

CHIRP

File Edit View Radio Help

Generic CSV: Untitled.csv x Baofeng BF-F8HP: (Untitled)\* x

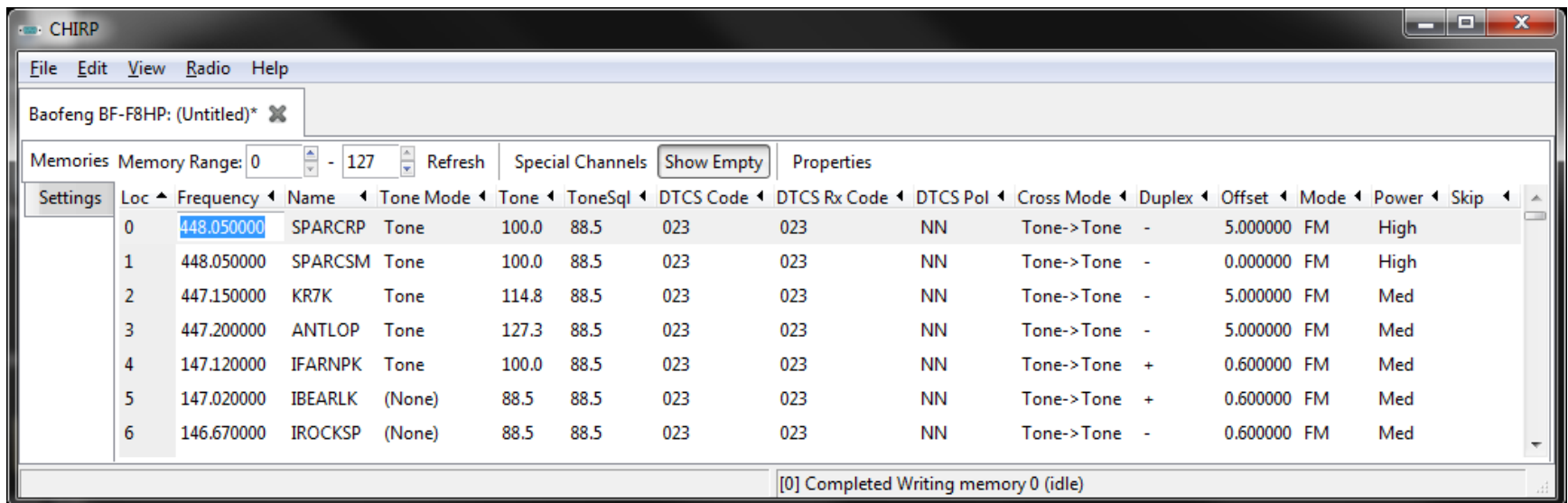
Memories Memory Range: 0 - 25 Refresh Special Channels Show Empty Properties

D-STAR	Loc	Frequency	Name	Tone Mode	Tone	ToneSql	DTCS Code	DTCS Pol	Duplex	Offset	Mode	Tune Step	Skip	Comment	URCALL	RPT1CALL	R
	0	146.010000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	1	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	2	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	3	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	4	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	5	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	6	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	7	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	8	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	9	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	10	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	11	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	12	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	13	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	14	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	15	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	16	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	17	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	18	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	19	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	20	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	21	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	22	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	23	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	24	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					
	25	0.000000		(None)	88.5	88.5	023	NN	(None)	0.600000	FM	5.0					

[0] Completed Getting memory 127 (idle)

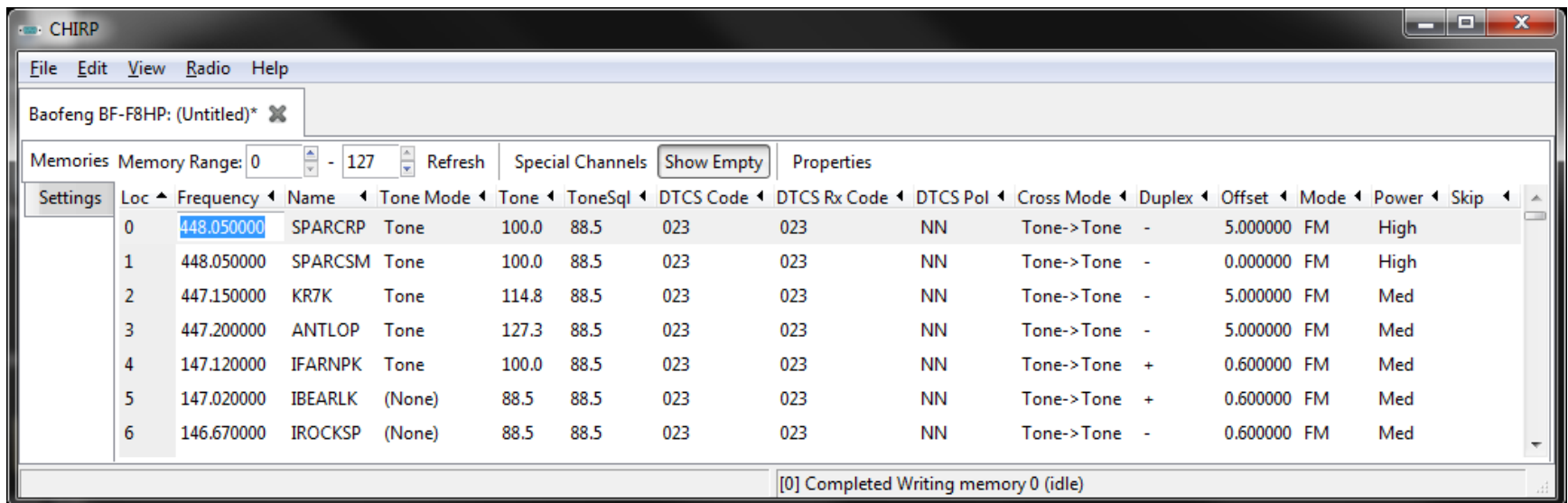
# Loc

This is the location or "channel number" of the memory. The range of values in this field are defined by your radio.



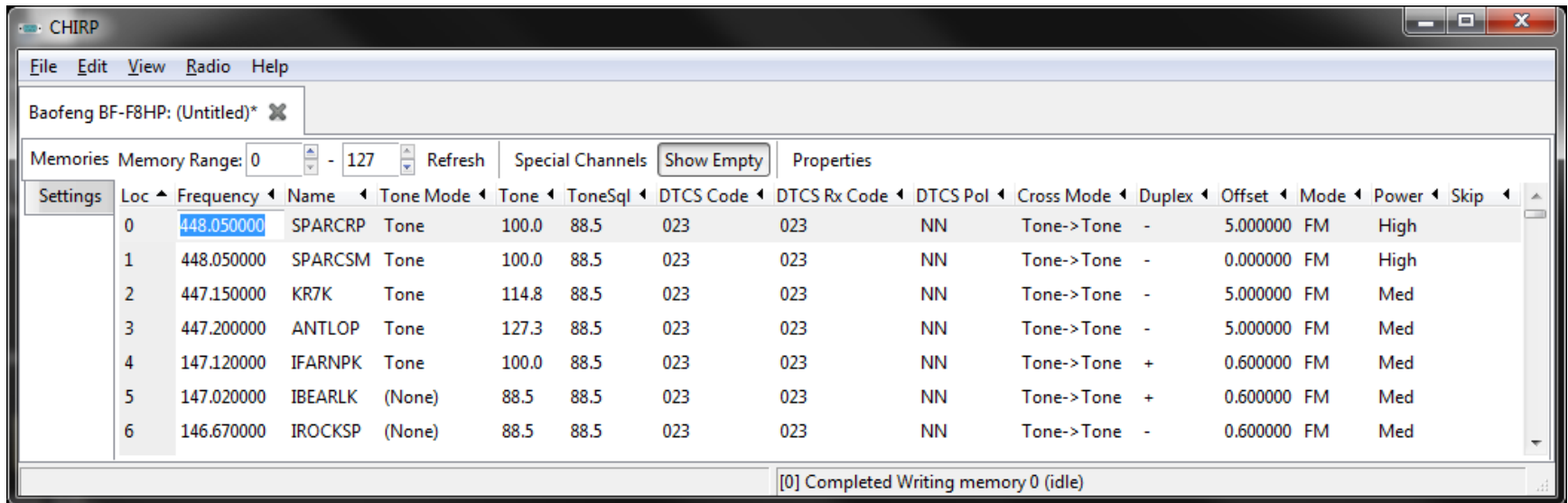
# Frequency

- This defines the receive frequency of the channel in Megahertz. If Duplex is set to None (no repeater offset) then it is also the transmit frequency of the channel.



# Name

- This is the alphanumeric label for the memory, as displayed on the front panel. The length and valid characters are defined by what the radio is capable of supporting, but generally is limited to 7 characters, and generally can only be set using software:

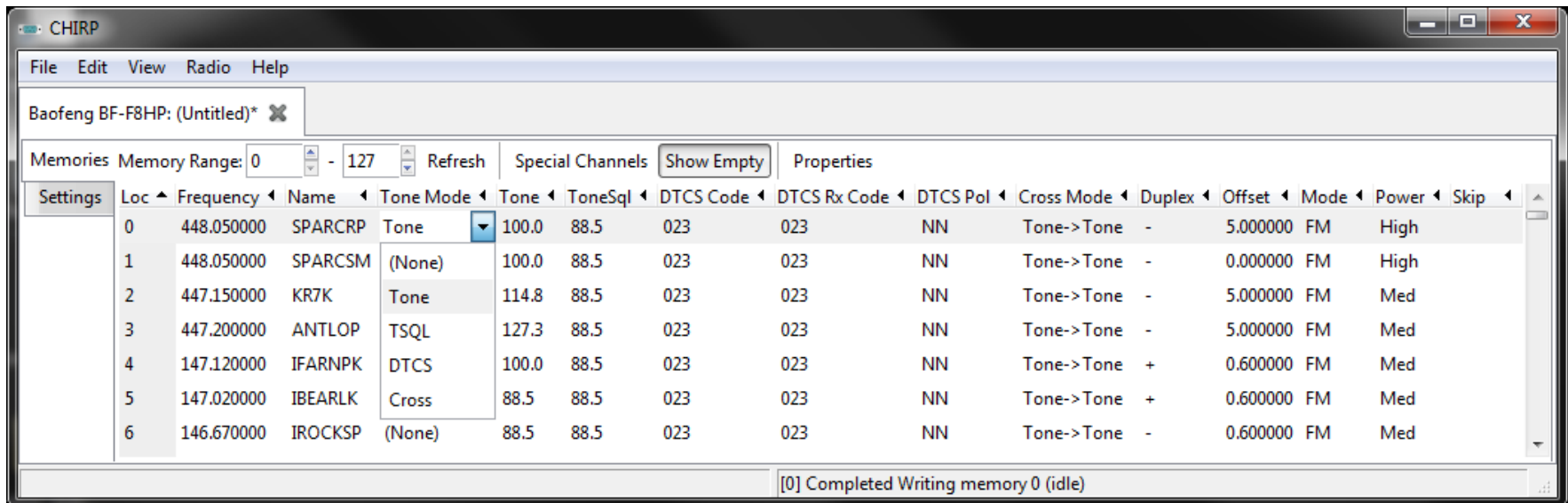


# Continuous Tone-Coded Squelch System (CTCSS)

- In telecommunications, Continuous Tone-Coded Squelch System or CTCSS is a circuit that is used to reduce the annoyance of listening to other users on a shared two-way radio communications channel. It is sometimes referred to as tone squelch or sub-channel since it has the effect of creating multiple virtual channels which are all using the same radio frequency. It does this by superimposing an extra audio tone over the voice transmission on a channel which can be heard by the radio circuitry but not by the human ear. Where more than one group of users is on the same radio frequency (called co-channel users), CTCSS circuitry mutes those users who are using a different CTCSS tone or no CTCSS.
- Radios in a professional two-way radio system using CTCSS always transmit their own tone code whenever the transmit button is pressed (the tone is transmitted at a low level simultaneously with the voice). This is called CTCSS encoding and continuously superimposes any one of 32, or as many as 50 (depending on which "standard" is used) precise, very low distortion, low-pitched audio tones on the transmitted signal, ranging from 67 to 257 Hz. The tones are usually referred to as sub-audible tones. *In USA licensed systems, Federal Communications Commission rules require CTCSS users on shared channels to disable their receiver's CTCSS to check if co-channel users are talking before transmitting.??*
- As a simple example, suppose a two-way radio frequency is shared by a pizza delivery service and a landscape maintenance service. Conventional radios without CTCSS would hear all transmissions from both groups. The landscapers would have to listen to the pizza shop. The pizza shop would have to hear about landscape customer complaints. If both installed CTCSS, units from each group would only hear radios from their own group. This is supposed to reduce missed messages and the distraction of unnecessary radio chatter. Note that in the example above there are only two co-channel users. In dense two-way radio environments a large number of groups may be present on a single radio channel. A disadvantage of using CTCSS in shared frequencies is that since users cannot hear transmissions from other groups, they may assume that the frequency is open when it is not and transmit simultaneously with another user, thus accidentally overriding or interfering with the other group's transmission. For example, in the above situation a landscaper might be communicating with another landscaper. Meanwhile, a pizza delivery driver—not hearing any transmissions—assumes that the frequency is clear and calls his dispatch office. Depending on several factors (locations, power, etc.), the two simultaneous transmissions could easily interfere with each other—resulting in one or both not being clearly understood. The more separate groups that share a single frequency and the more frequently that they transmit, the more likely that this accidental interference will occur. Radios with a "Busy Channel Lockout" feature will prevent transmitting in this case.

# Tone Mode

- This sets the mode used to transmit or receive **squelch tones** (or related selective-calling technologies). The following explains what the options mean:
  - **(None)**: No tone or code is transmitted, receive squelch is open or carrier-triggered.
  - **Tone**: A single CTCSS tone is transmitted, receive squelch is open or carrier-triggered. The tone used is that which is set in the **Tone** column.
  - **TSQL**: A single CTCSS tone is transmitted, receive squelch is tone-coded to the *same* tone. The tone used is that which is set in the **ToneSql** column.
  - **DTCS**: A single DTCS/DCS code is transmitted, receive squelch is digitally tone-coded to the *same* code. The code used is that which is set in the **DTCS Code** column.
  - **Cross**: A complex arrangement of squelch technologies is in use. See the definition of the **Cross Mode** column for details.

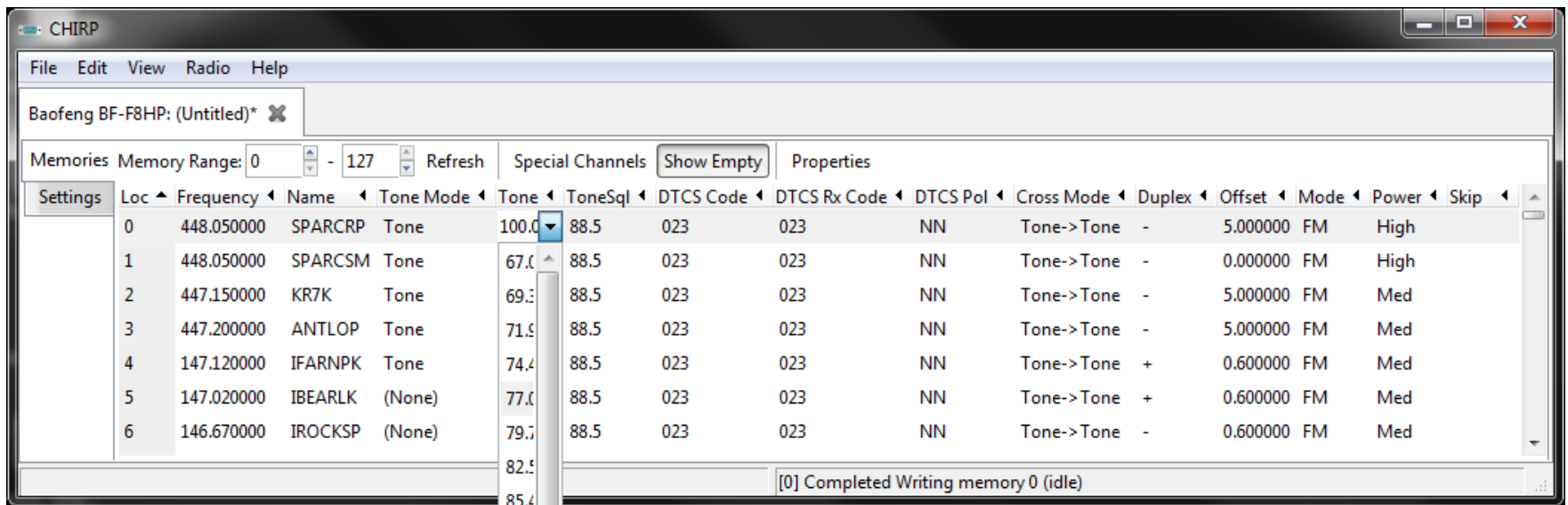


The screenshot shows the CHIRP software window with a menu bar (File, Edit, View, Radio, Help) and a title bar (Baofeng BF-F8HP: (Untitled)\*). Below the menu bar is a toolbar with buttons for Memories, Memory Range (0-127), Refresh, Special Channels, Show Empty, and Properties. The main area contains a table with columns: Loc, Frequency, Name, Tone Mode, Tone, ToneSql, DTCS Code, DTCS Rx Code, DTCS Pol, Cross Mode, Duplex, Offset, Mode, Power, and Skip. The table lists seven memory entries (0-6) with their respective settings. The 'Tone Mode' column is currently selected, showing a dropdown menu with options: (None), Tone, TSQL, DTCS, and Cross. The status bar at the bottom indicates '[0] Completed Writing memory 0 (idle)'.

Loc	Frequency	Name	Tone Mode	Tone	ToneSql	DTCS Code	DTCS Rx Code	DTCS Pol	Cross Mode	Duplex	Offset	Mode	Power	Skip
0	448.050000	SPARCRP	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	5.000000	FM	High	
1	448.050000	SPARCSM	(None)	100.0	88.5	023	023	NN	Tone->Tone	-	0.000000	FM	High	
2	447.150000	KR7K	Tone	114.8	88.5	023	023	NN	Tone->Tone	-	5.000000	FM	Med	
3	447.200000	ANTLOP	TSQL	127.3	88.5	023	023	NN	Tone->Tone	-	5.000000	FM	Med	
4	147.120000	IFARNPK	DTCS	100.0	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
5	147.020000	IBEARLK	Cross	88.5	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
6	146.670000	IROCKSP	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	

# Tone

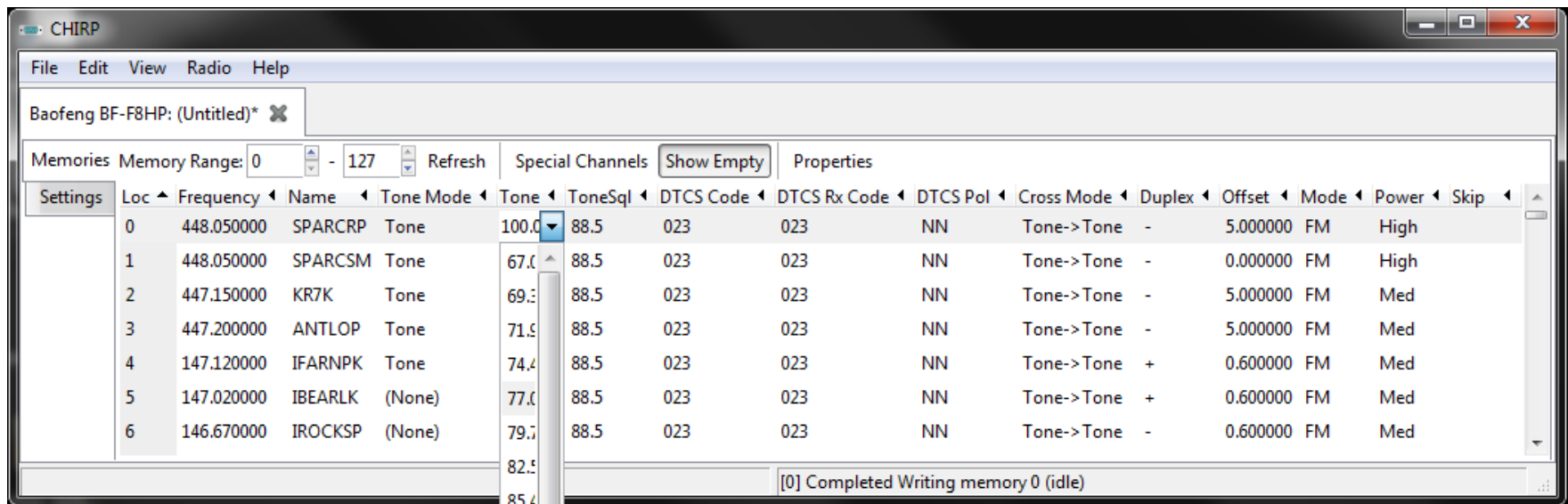
- This sets the CTCSS tone to be transmitted if the **Tone Mode** is set to **Tone**.





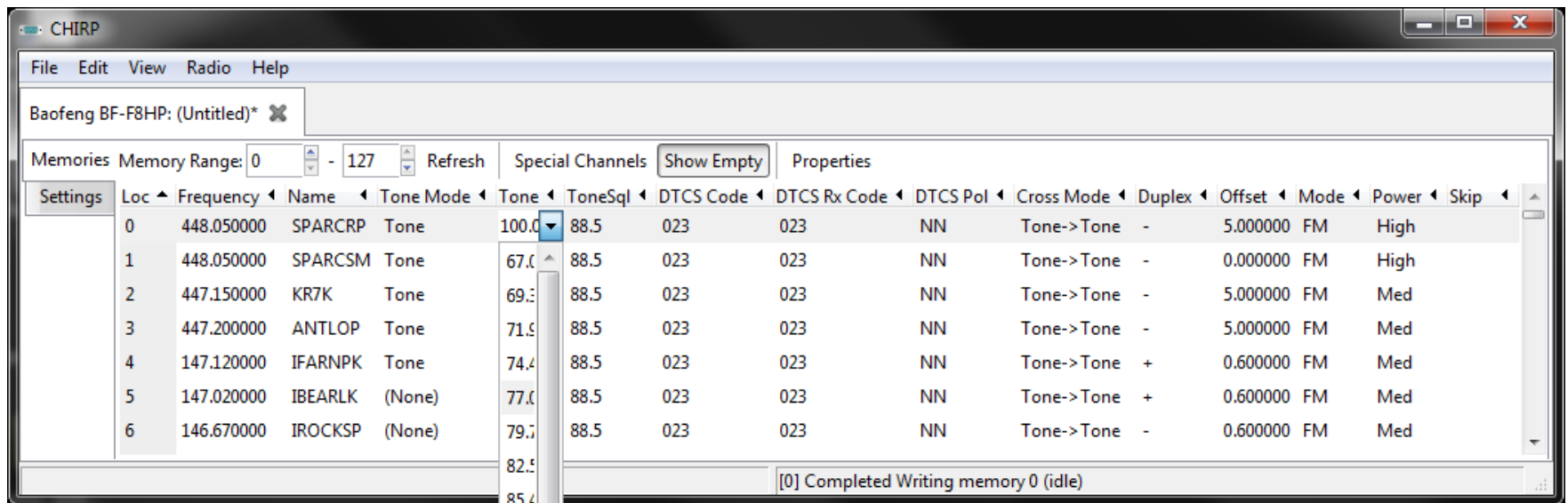
# ToneSql

- This sets the CTCSS tone to be transmitted and used for receiver squelch if the **Tone Mode** is set to **TSQL**.



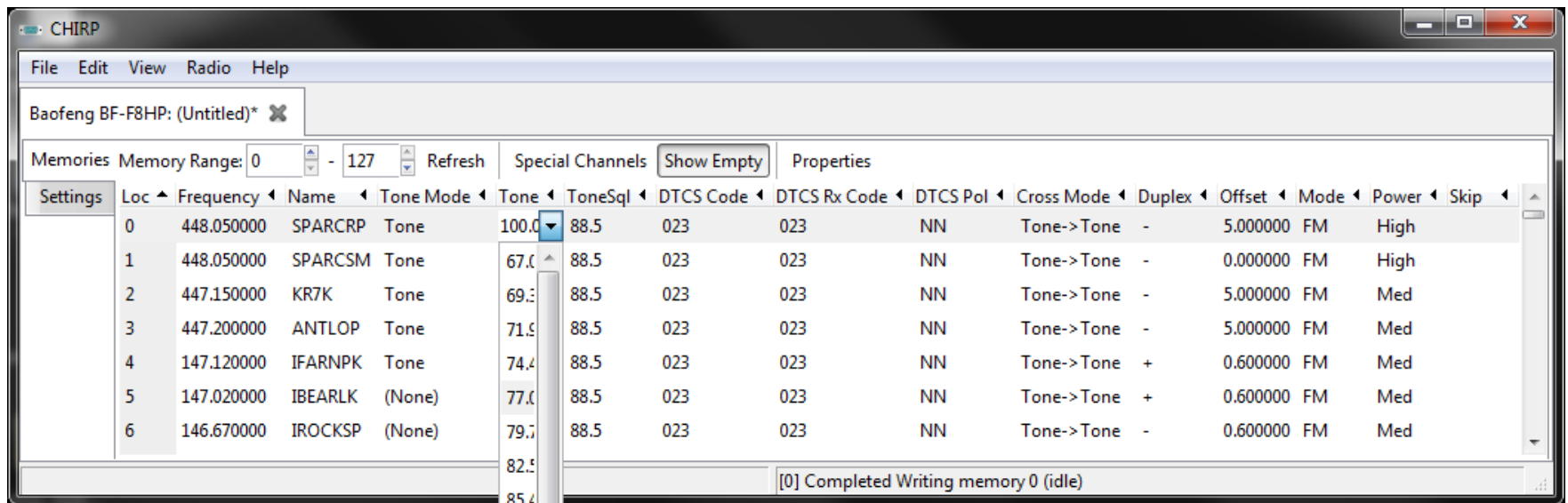
# DTCS Code

- This sets the DTCS code to be transmitted and used for receiver squelch if the **Tone Mode** is set to **DTCS**. In **Cross** mode it has additional meanings



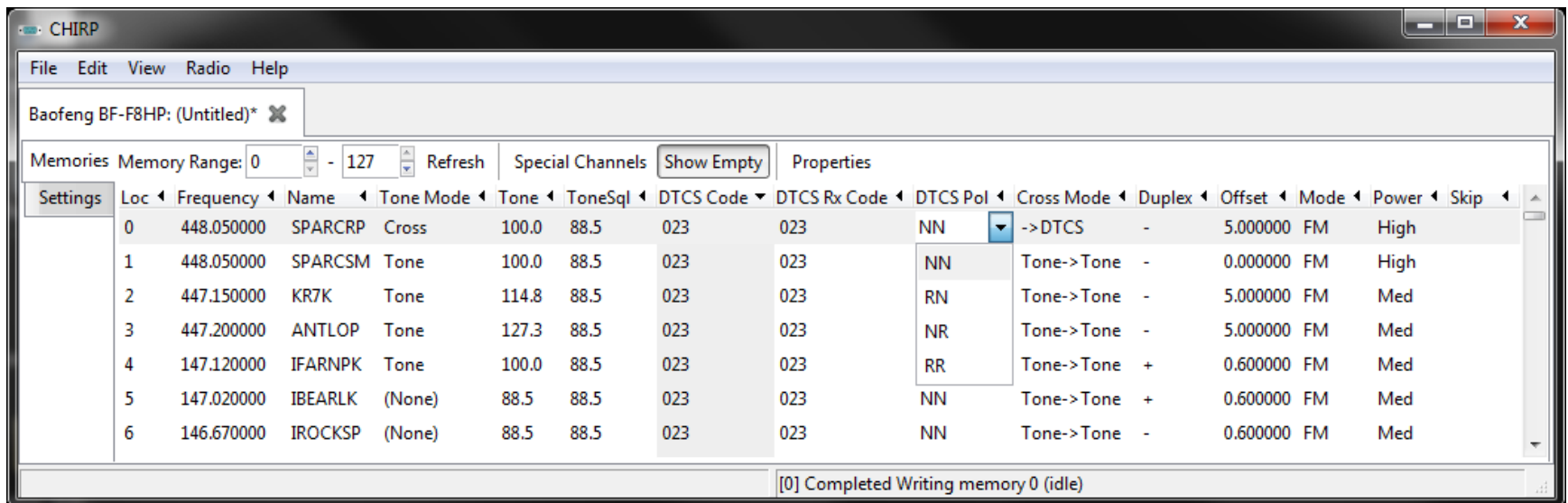
# DTCS Rx Code

- This sets the DTCS code to be used for receiver squelch (if the radio supports this capability) and **Tone Mode** is set to **Cross** (see description of **Cross Mode** for more details).



# DTCS Pol

- This sets the DTCS polarity of the transmitted code and the code used for the receive squelch any time DTCS is used for transmit or receive squelch. The first character pertains to the transmit polarity and the second pertains to receive polarity. The corresponding character is N for normal or R for reversed (aka "inverted") polarity.



# Cross Mode

- This field controls the squelch behavior of the channel when the **Tone Mode** is set to **Cross**. Each value consists of two technologies separated by an arrow (->). The value to the left of the arrow controls the selective-call method used on transmit, while the one to the right of the arrow controls the receive squelch. The possible values are:
  - Tone**: CTCSS tones are used. Transmit tone is taken from the **Tone** column, receive tone from the **ToneSql** column.
  - DTCS**: DTCS/DCS codes are used. Transmit code is taken from the **DTCS Code** column, receive code from the **DTCS Rx Code** column.
  - <blank>: Indicates that no method is used for this, either transmit or receive.
- The **Cross Mode** field allows addressing more commercial modes of squelch operation, such as using different tones or codes for transmit and receive. For example:
  - Tone->Tone**: This means use the **Tone** value for transmit tone, and the **ToneSql** value for receive squelch
  - Tone->DTCS**: This means use the **Tone** value for transmit tone, and the **DTCS Rx Code** value for receive squelch
  - DTCS->Tone**: This means use the **DTCS Code** value for transmit code, and the **ToneSql** value for receive squelch
  - >Tone**: This means do not transmit a **Tone** or **DTCS Code**, but use the **ToneSql** value for receive squelch
  - >DTCS**: This means do not transmit a **Tone** or **DTCS Code**, but use the **DTCS Rx Code** value for receive squelch
  - DTCS->**: This means use the **DTCS Code** value for transmit code, and receive squelch is open or carrier-triggered
  - DTCS->DTCS**: This means use the **DTCS Code** value for transmit code, and the **DTCS Rx Code** value for receive squelch

CHIRP

File Edit View Radio Help

Baofeng BF-F8HP: (Untitled)\*

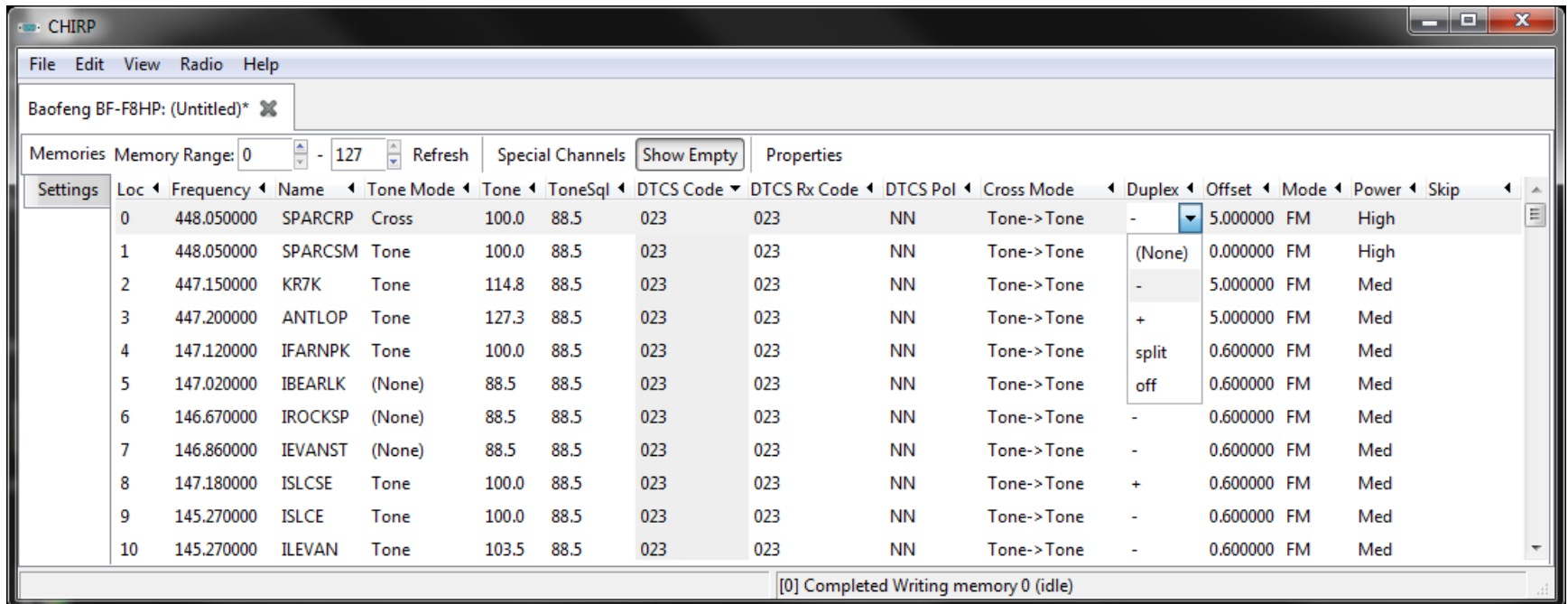
Memories Memory Range: 0 - 127 Refresh Special Channels Show Empty Properties

Settings	Loc	Frequency	Name	Tone Mode	Tone	ToneSql	DTCS Code	DTCS Rx Code	DTCS Pol	Cross Mode	Duplex	Offset	Mode	Power	Skip
	0	448.050000	SPARCRP	Cross	100.0	88.5	023	023	NN	Tone->Tone	-	5.000000	FM	High	
	1	448.050000	SPARCSM	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.000000	FM	High	
	2	447.150000	KR7K	Tone	114.8	88.5	023	023	NN	Tone->DTCS	-	5.000000	FM	Med	
	3	447.200000	ANTLOP	Tone	127.3	88.5	023	023	NN	DTCS->Tone	-	5.000000	FM	Med	
	4	147.120000	IFARNPK	Tone	100.0	88.5	023	023	NN	->Tone	+	0.600000	FM	Med	
	5	147.020000	IBEARLK	(None)	88.5	88.5	023	023	NN	->DTCS	+	0.600000	FM	Med	
	6	146.670000	IROCKSP	(None)	88.5	88.5	023	023	NN	DTCS->	-	0.600000	FM	Med	
	7	146.860000	IEVANST	(None)	88.5	88.5	023	023	NN	DTCS->DTCS	-	0.600000	FM	Med	
	8	147.180000	ISLCSE	Tone	100.0	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	9	145.270000	ISLCE	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	10	145.270000	ILEVAN	Tone	103.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	

[0] Completed Writing memory 0 (idle)

# Duplex

- This sets the duplex mode of the channel. If set to **(None)** then the transmit and receive frequencies are the same. If set to either **+** or **-** (plus or minus) then the transmit frequency will be either above or below (respectively) the receive frequency by the value of the **Offset** field.
- If the duplex is set to **split** then the **Offset** field should contain the absolute transmit frequency to be used (if the radio supports this capability).
- If the duplex is set to **off** then transmission on this channel will be disabled (which is **required** if you intend to listen to channels outside the FCC allocated amateur band, such as public safety channels in the 155MHz range).
- Note that for simplex channels, this should be set to **(None)** and repeater channels should have this set to either **+, -, or split**.

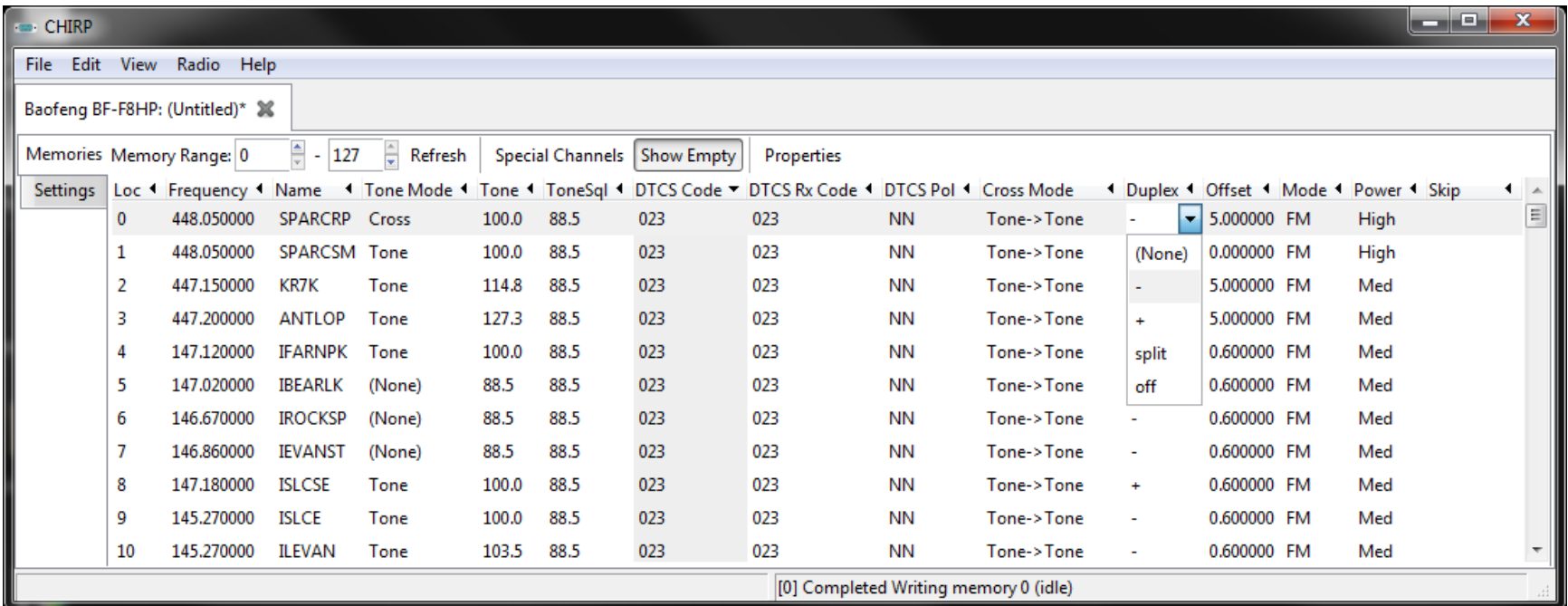


The screenshot shows the CHIRP software window with the title "Baofeng BF-F8HP: (Untitled)\*". The main table lists 11 channels. The "Duplex" column has a dropdown menu open, showing options: (None), -, +, split, and off. The status bar at the bottom indicates "[0] Completed Writing memory 0 (idle)".

Settings	Loc	Frequency	Name	Tone Mode	Tone	ToneSql	DTCS Code	DTCS Rx Code	DTCS Pol	Cross Mode	Duplex	Offset	Mode	Power	Skip
	0	448.050000	SPARCRP	Cross	100.0	88.5	023	023	NN	Tone->Tone	-	5.000000	FM	High	
	1	448.050000	SPARCSM	Tone	100.0	88.5	023	023	NN	Tone->Tone	(None)	0.000000	FM	High	
	2	447.150000	KR7K	Tone	114.8	88.5	023	023	NN	Tone->Tone	-	5.000000	FM	Med	
	3	447.200000	ANTLOP	Tone	127.3	88.5	023	023	NN	Tone->Tone	+	5.000000	FM	Med	
	4	147.120000	IFARNPK	Tone	100.0	88.5	023	023	NN	Tone->Tone	split	0.600000	FM	Med	
	5	147.020000	IBEARLK	(None)	88.5	88.5	023	023	NN	Tone->Tone	off	0.600000	FM	Med	
	6	146.670000	IROCKSP	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	7	146.860000	IEVANST	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	8	147.180000	ISLCSE	Tone	100.0	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	9	145.270000	ISLCE	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	10	145.270000	ILEVAN	Tone	103.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	

# Offset

- This sets the amount of difference between the transmit and receive frequencies used for the channel if **Duplex** is not **(None)** or **off** (in which case it is ignored).
- If the **Duplex** is set to a shift direction, then the **Offset** field should be set to the amount (in Megahertz) above or below the receive frequency to shift to find the transmit frequency.
- If **Duplex** is set to **split** then the **Offset** field should be set to an absolute transmit frequency.



The screenshot shows the CHIRP software interface. The title bar reads "CHIRP". The menu bar includes "File", "Edit", "View", "Radio", and "Help". The main window title is "Baofeng BF-F8HP: (Untitled)\*". Below the title bar, there are controls for "Memories" (Memory Range: 0 - 127, Refresh button), "Special Channels" (Show Empty button), and "Properties".

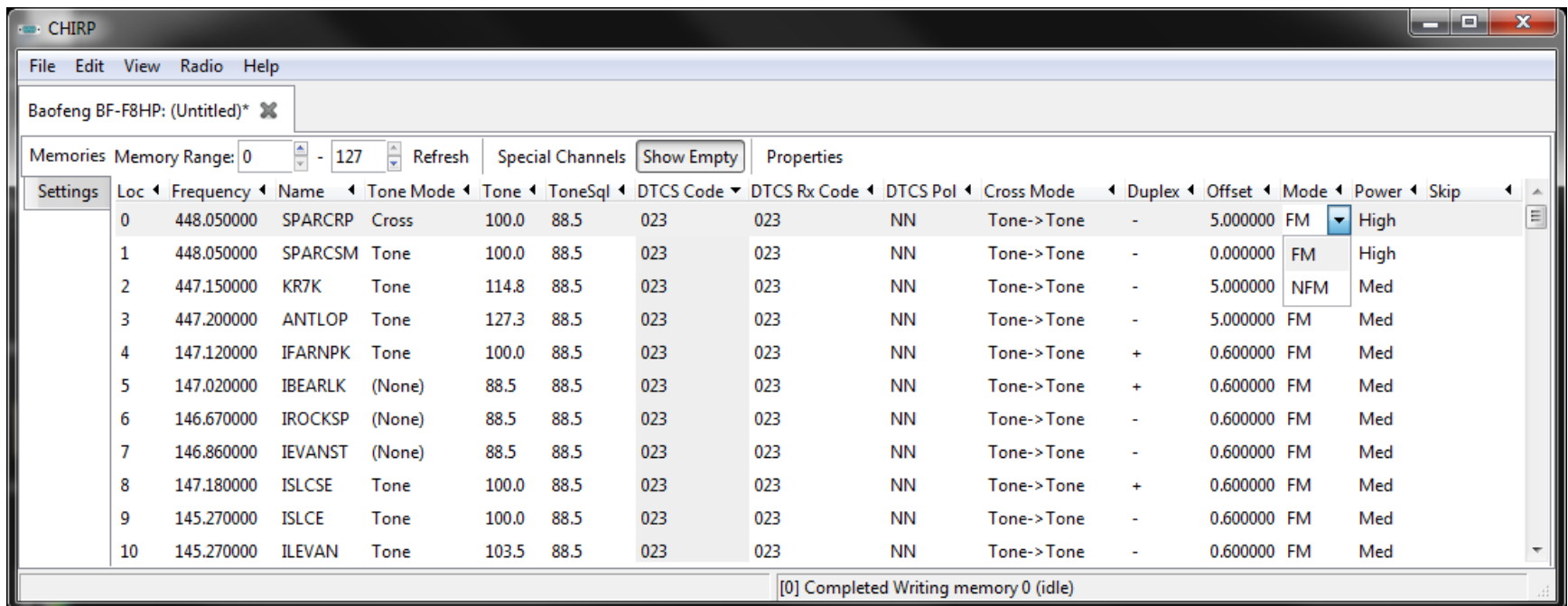
The main area contains a table with the following columns: Settings, Loc, Frequency, Name, Tone Mode, Tone, ToneSql, DTCS Code, DTCS Rx Code, DTCS Pol, Cross Mode, Duplex, Offset, Mode, Power, and Skip. The table lists 11 memory channels (Loc 0 to 10).

Settings	Loc	Frequency	Name	Tone Mode	Tone	ToneSql	DTCS Code	DTCS Rx Code	DTCS Pol	Cross Mode	Duplex	Offset	Mode	Power	Skip
	0	448.050000	SPARCRP	Cross	100.0	88.5	023	023	NN	Tone->Tone	-	5.000000	FM	High	
	1	448.050000	SPARCSM	Tone	100.0	88.5	023	023	NN	Tone->Tone	(None)	0.000000	FM	High	
	2	447.150000	KR7K	Tone	114.8	88.5	023	023	NN	Tone->Tone	-	5.000000	FM	Med	
	3	447.200000	ANTLOP	Tone	127.3	88.5	023	023	NN	Tone->Tone	+	5.000000	FM	Med	
	4	147.120000	IFARNPK	Tone	100.0	88.5	023	023	NN	Tone->Tone	split	0.600000	FM	Med	
	5	147.020000	IBEARLK	(None)	88.5	88.5	023	023	NN	Tone->Tone	off	0.600000	FM	Med	
	6	146.670000	IROCKSP	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	7	146.860000	IEVANST	(None)	88.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	8	147.180000	ISLCSE	Tone	100.0	88.5	023	023	NN	Tone->Tone	+	0.600000	FM	Med	
	9	145.270000	ISLCE	Tone	100.0	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	
	10	145.270000	ILEVAN	Tone	103.5	88.5	023	023	NN	Tone->Tone	-	0.600000	FM	Med	

At the bottom of the window, a status bar indicates "[0] Completed Writing memory 0 (idle)".

# Mode

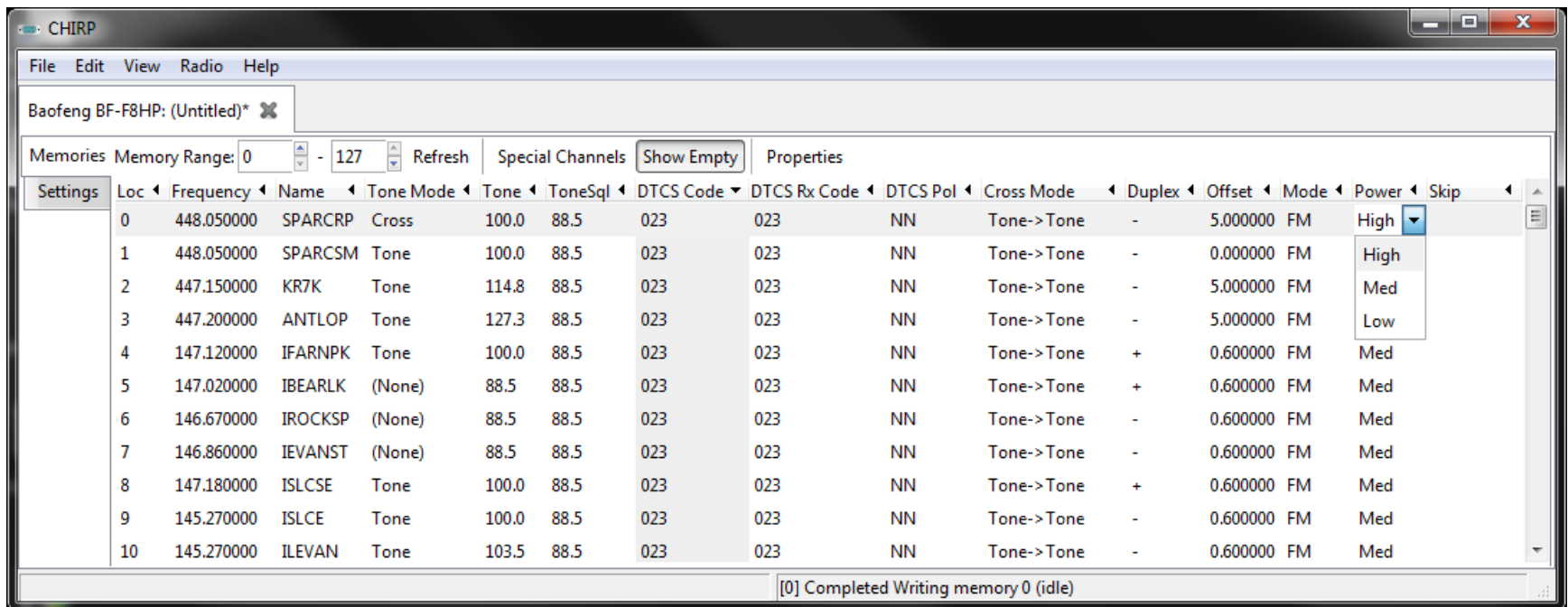
- This controls the transmit and receive mode of the channel. The following lists the common values and their meanings:
  - **FM**: "Wide" FM for two-way communications (i.e. 5 kHz deviation)
  - **NFM**: "Narrow" FM for two-way communications (i.e. 2.5 kHz deviation)
  - **WFM**: "Wide" FM for broadcast communications (i.e. ~100 kHz deviation)
  - **AM**: "Narrow" AM for two-way communications (i.e. aircraft band in the US)
  - **DV**: Icom's digital D-STAR mode





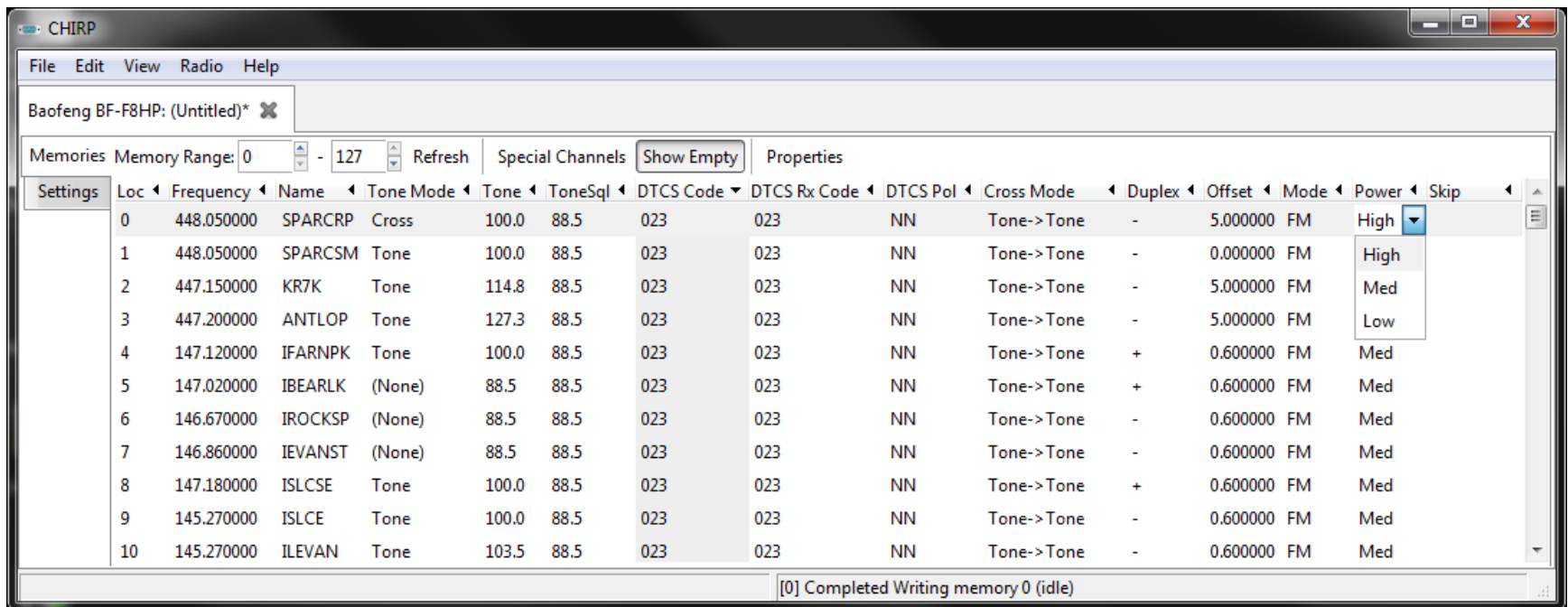
# Tune Step

- The tuning step used to channelize the receive frequency.



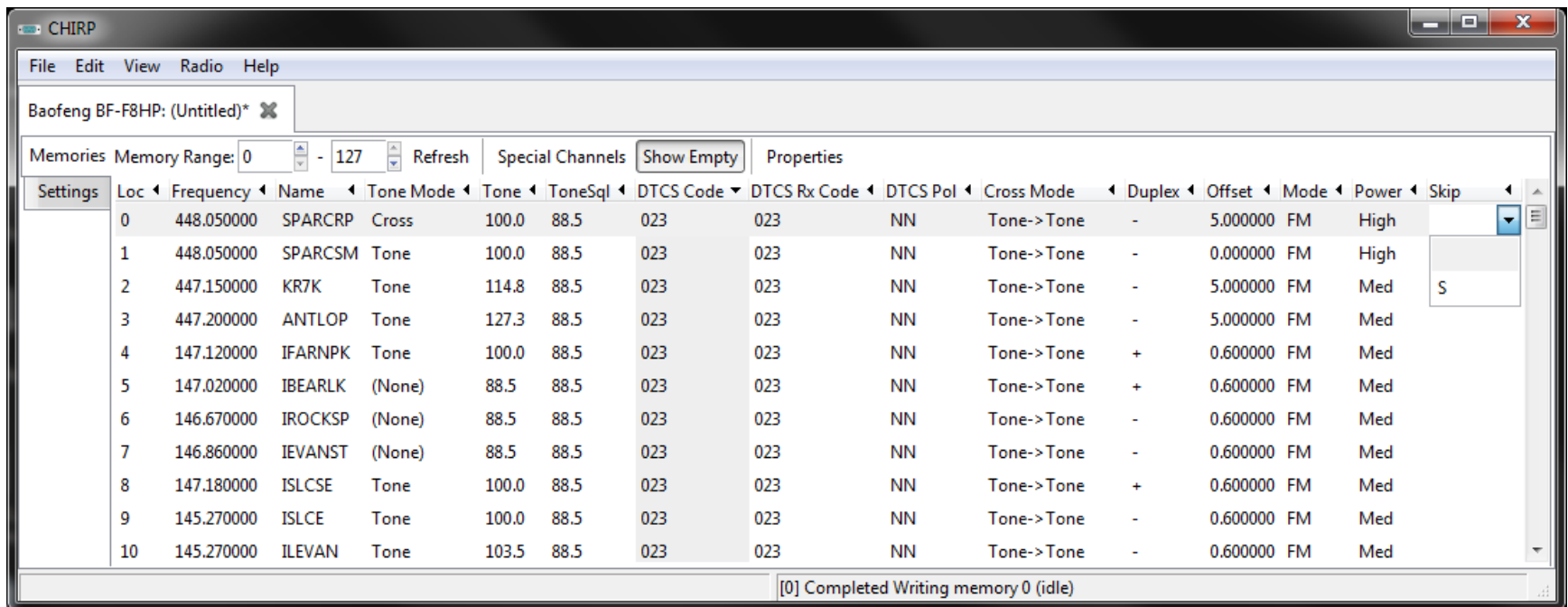
# Power

- Used to select which power level the radio transmits on (Low/High or Low/Medium/High)
  - Actual power varies by radio but could be 1w/5w or 1w/4w/7w
  - If your radio is capable of transmitting on non-licensed bands, make sure you do not exceed the legal transmit power levels of those bands!



# Skip

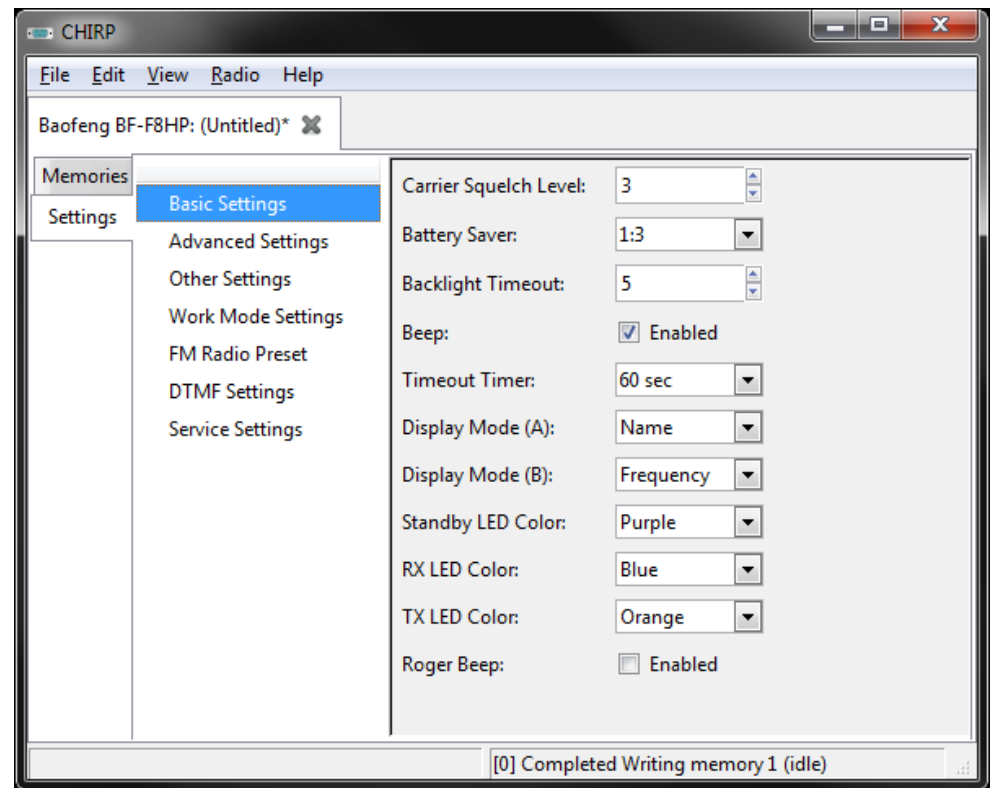
- The scan skip mode for the channel. The values and their meanings are:
- **S**: Skip this channel during scan
- **P**: This channel is a priority



# Understanding the “Settings” Tab Sub-Menus

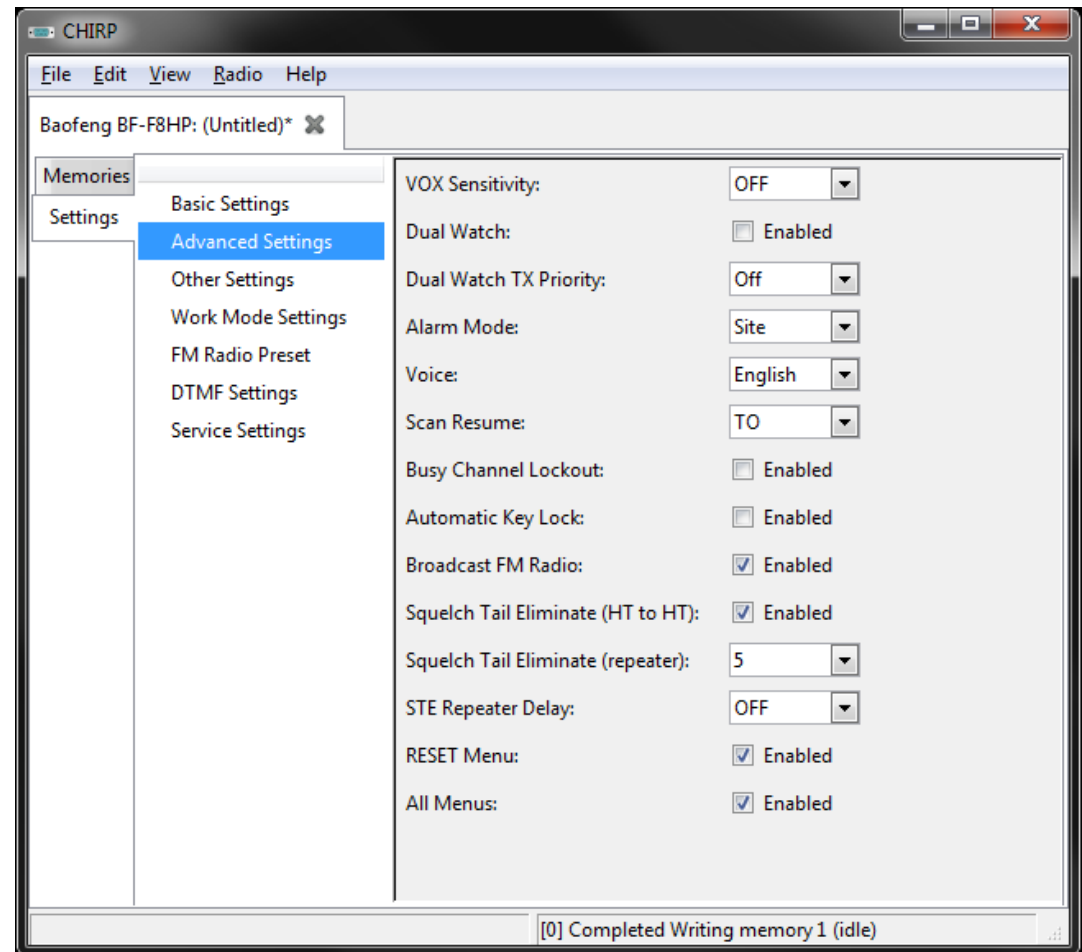
## Settings Menu: Basic Settings

- I like to use certain of these basic settings, allowing me to view both the name and frequency of a channel I’m on when using a two channel display for example.
- Carrier Squelch Level-
- Battery Saver-
- Timeout timer-



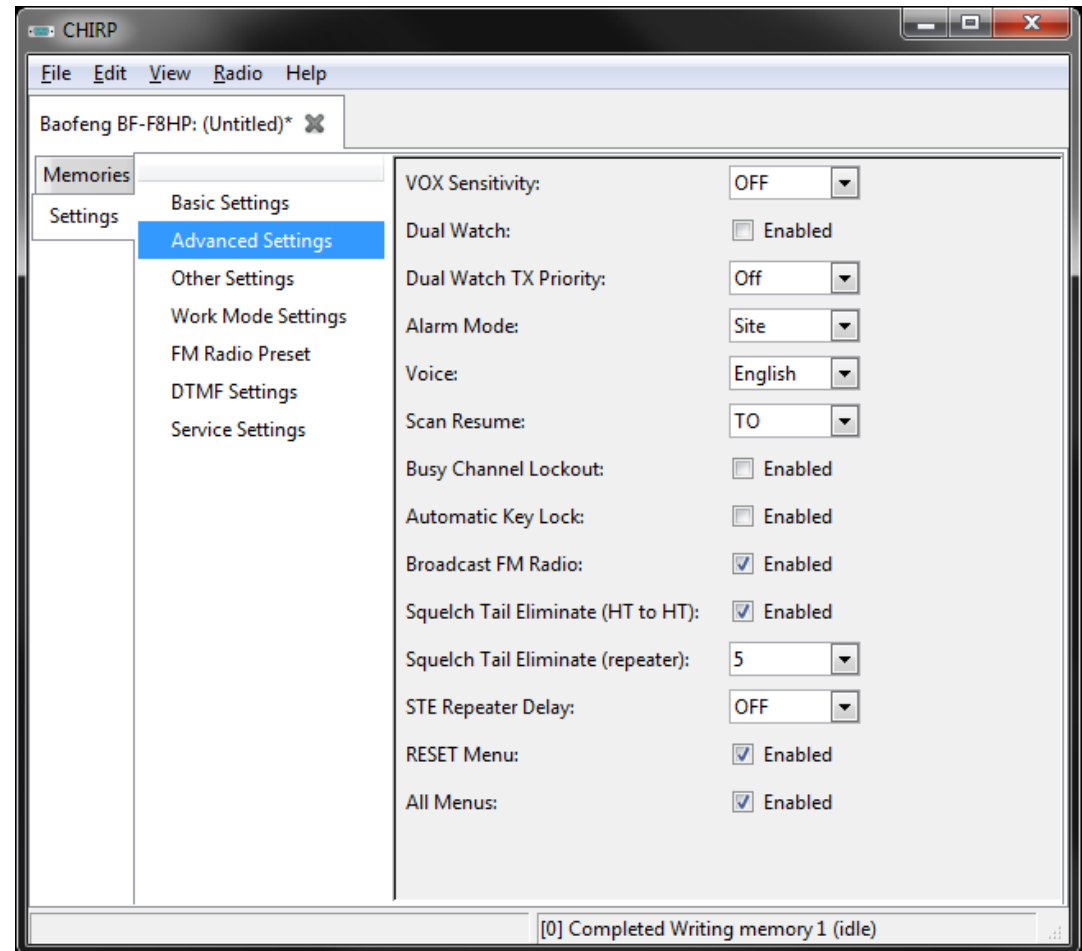
# Settings Menu: Advanced Settings

- It is highly advisable to uncheck “RESET menu” so that you cannot inadvertently wipe your radio from the keypad.
- Dual Watch allows your radio to listen to Channel A and B at the same time; make sure both channels aren't set to the same frequency if this is enabled.
- FM Radio should be enabled, allowing you to listen to FM stations between 87.1 to 107.9 MHz FM.
  - VOX Sensitivity- Voice-On Switching should not be used with HAM radios.
  - Dual Watch- Allows the radio to “listen” to two channels simultaneously, such as the receive AND transmit frequencies of a repeater



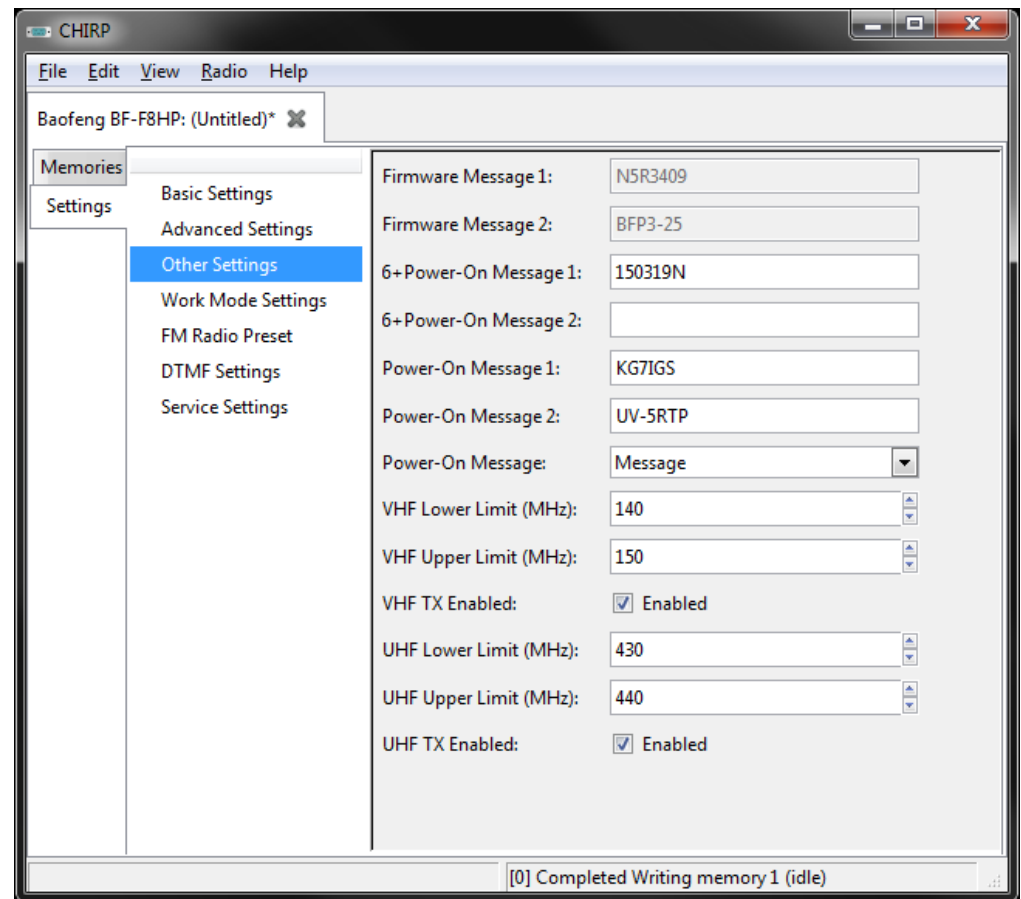
# Settings Menu: Advanced Settings

- Scan Resume –
  - Busy Channel Lockout:
  - Squelch Tail Eliminate:
  - STE Repeater Delay:

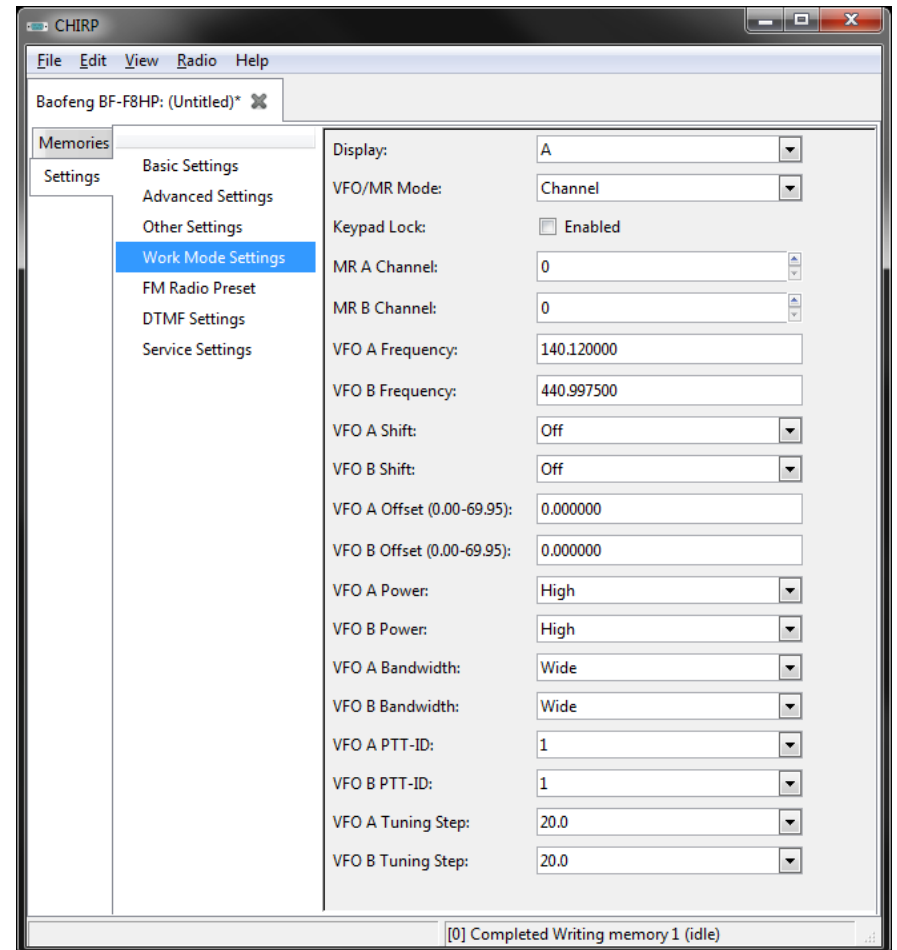


# Settings Menu: Other Settings

- Set VHF/UHF limits to FCC Values:
  - For 2m:
    - 144 – 148 MHz
  - For 70cm:
    - 420 to 450 MHz
- The international versions of some radios operate outside of these ranges, such as the Baofeng:
  - Are advertised to operate from 136-172MHz and 400-520MHz.
  - Major No-No to use “international” band allocations within the USA!
  - The one possible exception is if you program your radio to “receive only” on the local public safety/Marine frequencies in the 150-170MHz range.



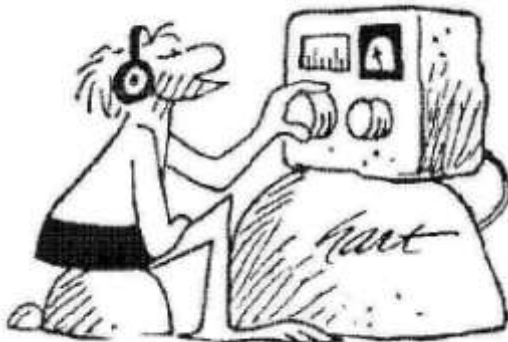
# Settings Menu: Work Mode Settings



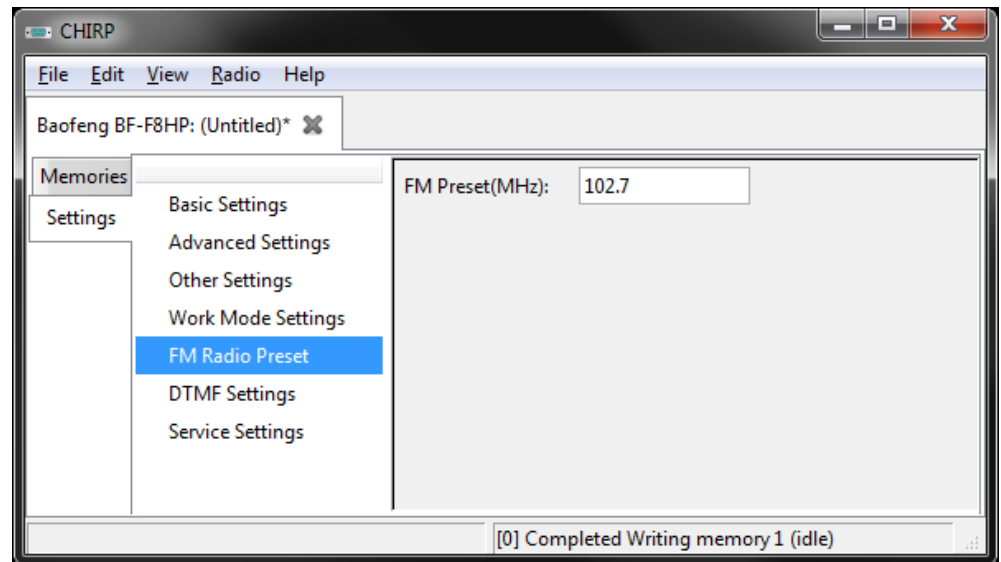


# Settings Menu: FM Radio Preset

- I like to have my FM Radio Preset to 102.7MHz, KSL News Radio since I primarily keep radios on hand for emergencies. .

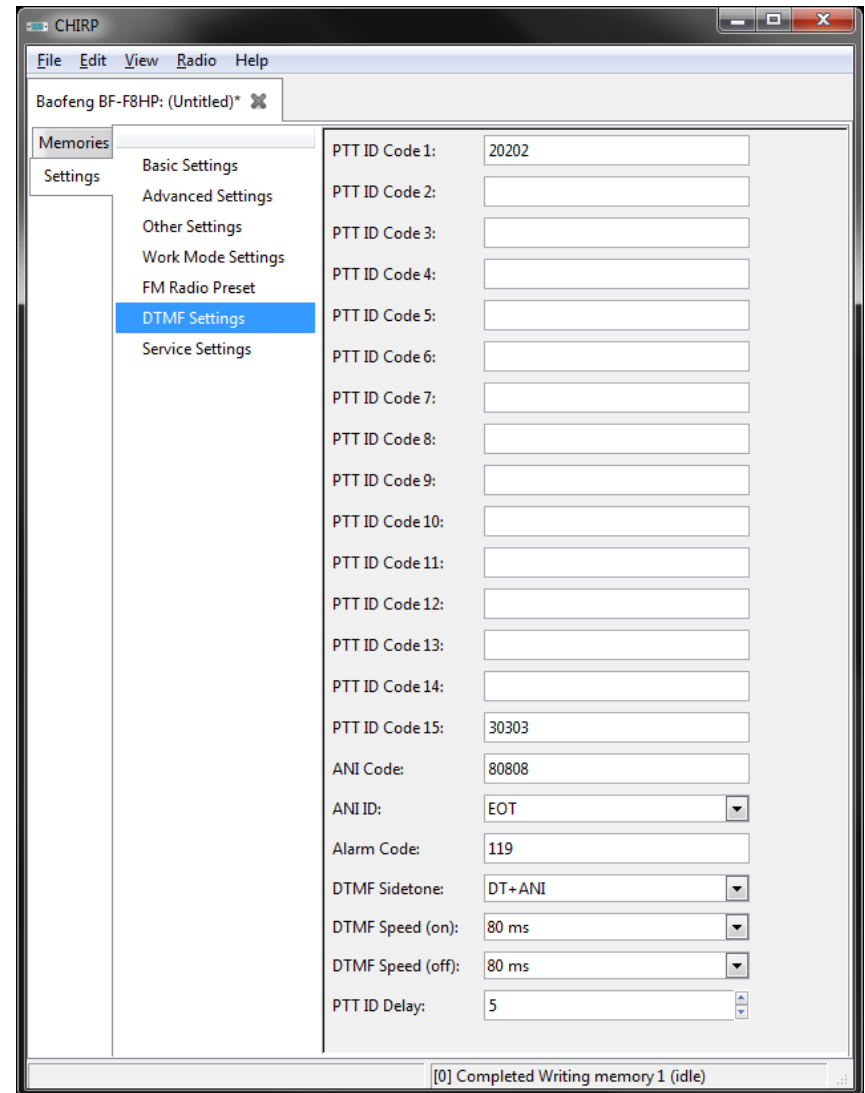


(c) 1994 Creator/Syadco, Inc.



# Settings Menu: DTMF Settings

- In case you are using a repeater that is tied to the local telephone system...

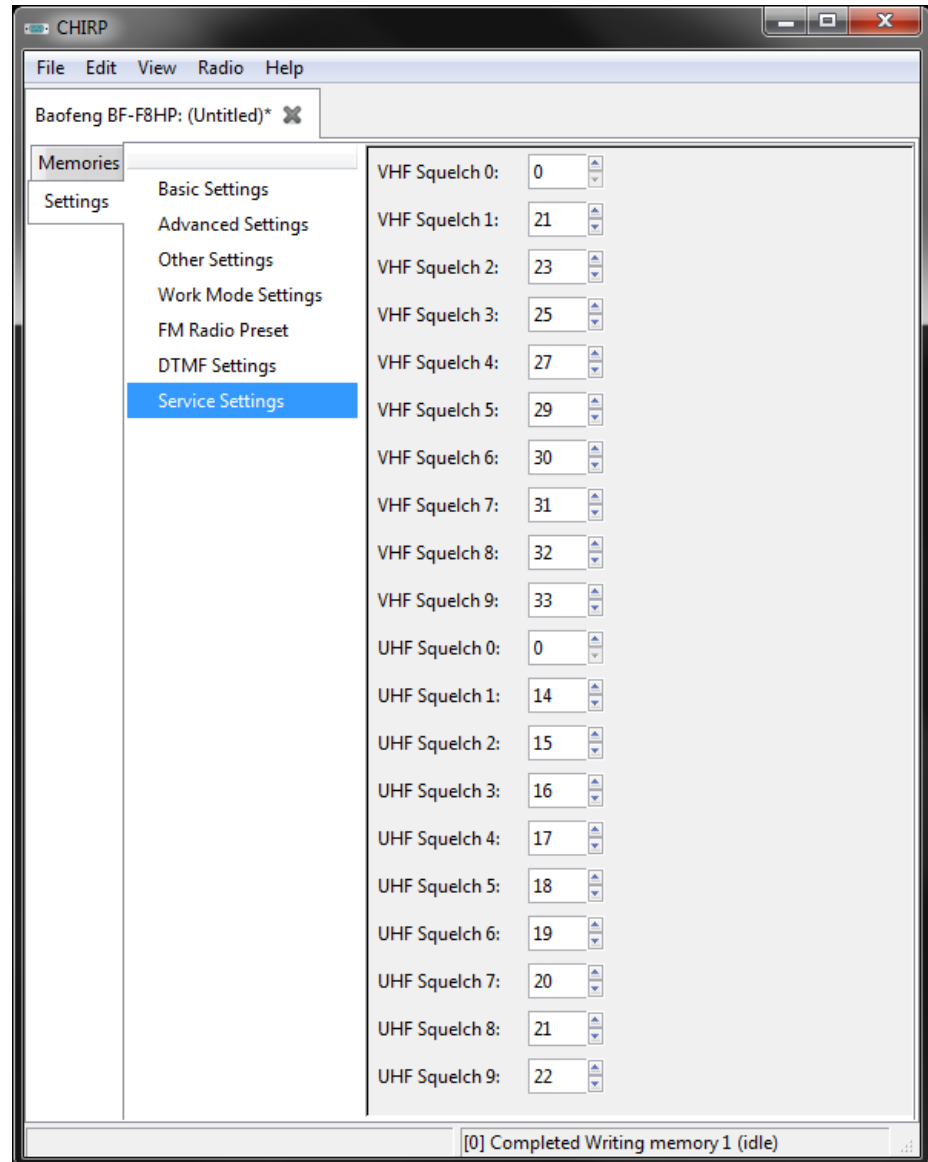
A screenshot of the CHIRP (Cross-Platform In-Radio Programming) software interface. The window title is "CHIRP". The menu bar includes "File", "Edit", "View", "Radio", and "Help". The main window shows a settings menu for a "Baofeng BF-F8HP: (Untitled)\*" radio. The "Settings" menu is open, and "DTMF Settings" is selected. The settings are as follows:

Setting	Value
PTT ID Code 1:	20202
PTT ID Code 2:	
PTT ID Code 3:	
PTT ID Code 4:	
PTT ID Code 5:	
PTT ID Code 6:	
PTT ID Code 7:	
PTT ID Code 8:	
PTT ID Code 9:	
PTT ID Code 10:	
PTT ID Code 11:	
PTT ID Code 12:	
PTT ID Code 13:	
PTT ID Code 14:	
PTT ID Code 15:	30303
ANI Code:	80808
ANI ID:	EOT
Alarm Code:	119
DTMF Sidetone:	DT+ANI
DTMF Speed (on):	80 ms
DTMF Speed (off):	80 ms
PTT ID Delay:	5

The status bar at the bottom indicates "[0] Completed Writing memory 1 (idle)".

# Services Settings

- This is where you can adjust the Squelch levels on certain radios, which is very useful for improving performance in RF-noisy environments



# Fixing poor squelch levels on Baofeng radios

- The slightest whisper of a modem, router or switch still opens up the squelch, whatever the setting. But thanks to the efforts of the CHIRP development team, you can now change this.



# Adjusting Squelch

- CHIRP will let you decide when the squelch opens up – either when receiving a tiny noisy signal, or when a repeater around the corner starts transmitting.
- As you can see you can set a personal threshold for every individual squelch level (1-9), and enter different settings for VHF and UHF.
  - The higher the number, the more signal you need to open up the squelch.



CHIRP

File Edit View Radio Help

Baofeng BF-F8HP: (Untitled)\*

Memories

Settings

- Basic Settings
- Advanced Settings
- Other Settings
- Work Mode Settings
- FM Radio Preset
- DTMF Settings
- Service Settings

VHF Squelch 0:	0
VHF Squelch 1:	21
VHF Squelch 2:	23
VHF Squelch 3:	25
VHF Squelch 4:	27
VHF Squelch 5:	29
VHF Squelch 6:	30
VHF Squelch 7:	31
VHF Squelch 8:	32
VHF Squelch 9:	33
UHF Squelch 0:	0
UHF Squelch 1:	14
UHF Squelch 2:	15
UHF Squelch 3:	16
UHF Squelch 4:	17
UHF Squelch 5:	18
UHF Squelch 6:	19
UHF Squelch 7:	20
UHF Squelch 8:	21
UHF Squelch 9:	22

[0] Completed Writing memory 1 (idle)

# RepeaterBook.com

NOT LOGGED IN! [North American Repeaters](#) | [Worldwide Repeaters](#) | [FAQ](#) [Repeater Call](#)

[Quick](#) [Advanced](#) [Niche Modes](#) [Travel](#) [Proximity](#) [Free Text](#) [Vacancy](#) [Google Site](#)

 **Utah Amateur Radio Repeaters - Quick Search**  
There are 320 Utah repeaters in the database.  
[Add New Repeater](#)

**Band:**

<a href="#">All</a>	<a href="#">10 m</a>	<a href="#">6 m</a>	<a href="#">2 m</a>	<a href="#">1 1/4 m</a>	<a href="#">70 cm</a>	<a href="#">33 cm</a>	<a href="#">23 cm</a>
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**Feature:**

<a href="#">Autopatch</a>	<a href="#">EchoLink</a>	<a href="#">IRLP</a>	<a href="#">WIRE</a>	<a href="#">DMR</a>	<a href="#">NXDN</a>
<a href="#">System Fusion</a>	<a href="#">Linked</a>	<a href="#">D-Star</a>	<a href="#">P25</a>	<a href="#">AllStar</a>	<a href="#">Wide Area Coverage</a>

**Linked systems:**

<a href="#">Intermountain Intertie System</a>	<a href="#">Sinbad Desert (SDARC) System</a>	<a href="#">Skyline Repeater System</a>
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**Emergency Service Repeaters:**

<a href="#">ARES</a>	<a href="#">RACES</a>	<a href="#">Weather Nets</a>	<a href="#">SKYWARN</a>	<a href="#">Emergency Power</a>
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**Repeaters recommended for use by nearby highway:**

<a href="#">15</a>	<a href="#">70</a>	<a href="#">89</a>	<a href="#">84</a>	<a href="#">10</a>	<a href="#">160</a>	<a href="#">163</a>	<a href="#">189</a>	<a href="#">191</a>	<a href="#">40</a>	<a href="#">491</a>	<a href="#">50</a>	<a href="#">6</a>	<a href="#">89</a>
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# SPARC 70cm REPEATER – SLC Airport

- 448.050 MHz (Tx)
  - Negative Offset (443.050 MHz Rx)
  - 100Hz Tone (to open the squelch on the receiver)
- 
- ~50 Watts Effective Isentropic Radiated Power (EIRP)
  - ~15-20 miles line of sight with a flexible whip antenna and a 7 watt handheld transceiver

# DCARC Repeaters – Antelope Island

- 70cm
  - 447.200 MHZ (Tx)
  - Negative Offset (442.200 MHz Rx)
  - No PL tone
- 2m
  - 147.040 MHZ (Tx)
  - Positive Offset of 600kHz (147.640 MHz Rx)
  - 123Hz PL Tone



# Ogden ARC – Mount Ogden

- 70cm
  - 448.600 MHZ (Tx)
  - Negative Offset (443.600 MHz Rx)
  - 123Hz PL tone
- 2m
  - 146.900 MHZ (Tx)
  - Negative Offset of 600kHz (146.300 MHz Rx)
  - 123Hz PL Tone

# Intermountain Intertie

- There are many repeaters out there, but the “Intermountain Intertie” is a repeater network running from southern Idaho/Wyoming (Montanna/Colorado) down into northern Arizona/Nevada (sometimes into California). Using this repeater network requires you to select the repeater you are nearest, but it is an amazingly effective way to communicate long range without an HF radio.
- When using networked repeaters such as this, please be courteous of others that may be wanting to use the system, frequently leaving time for breaks, and limiting QSOs to no more than 10 minutes during the heavier usage times - and it is uncouth to monopolize the system at *any* time. Keep in mind that it takes a good portion of a second for all of the various links to 'turn around' so be sure to pause for several seconds when you allow for breaks, and key up for about a second before you say your first word.
- This system is extensive, and using it is sufficiently involved that I won't go into it here, but know that it is out there! If you are so inclined, dial it up and just listen in. You can learn a LOT about radio just from listening.
- <http://utahvhfs.org/snowlink.html>

# Intertie Map

- This is a simplified map of Utah coverage:



# Happy Chirping!

