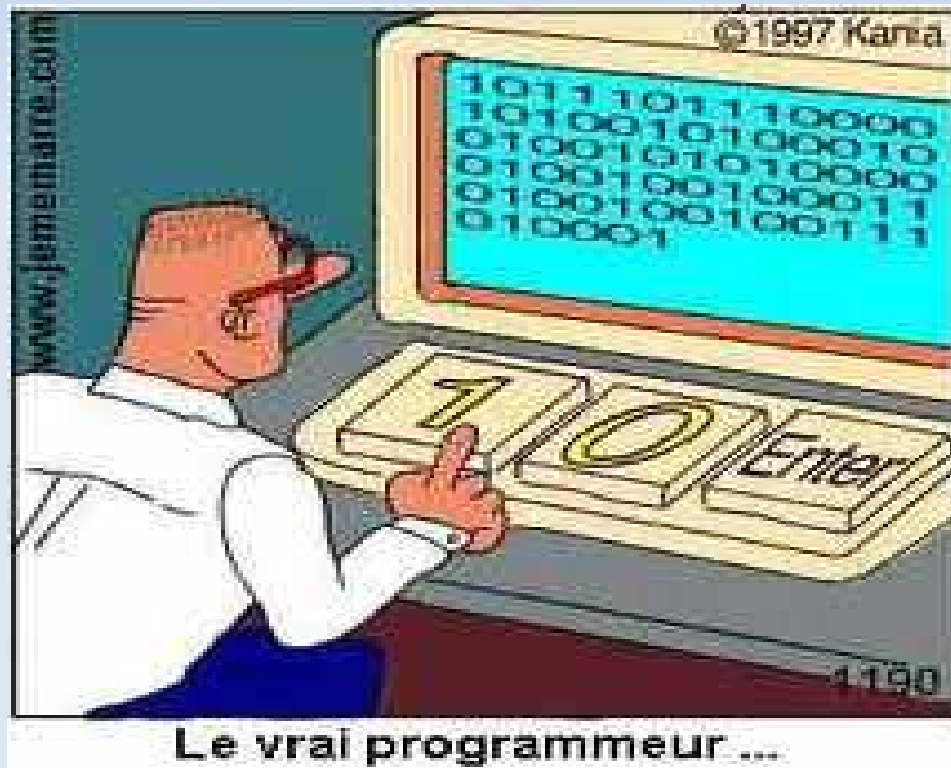


# Programming Portable Radios '7 < ≠ F D



Jay Marcucci, KC2YSK  
Presentation 2013

# Agenda

- Introduction
- Programs
- CHIRP
- System requirements
- Programming
- Conclusion



# Introduction

- Modern radios can be programmed by using a computer, a program and a cable:
  - Easier than on the (small) radio
  - Multiple configurations can be saved
  - Easy to exchange with fellow hams



# Introduction

## Programming radios

### Specific

FM channels  
Display colors  
Squelch level  
VFO mode  
Frequency limitations  
Etc.

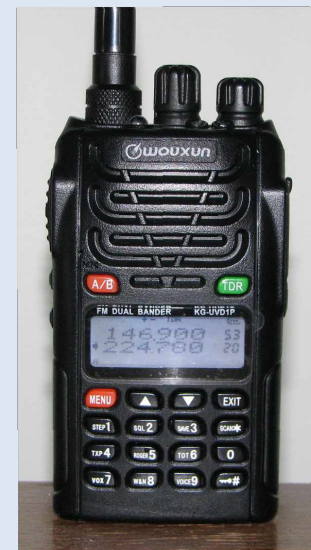
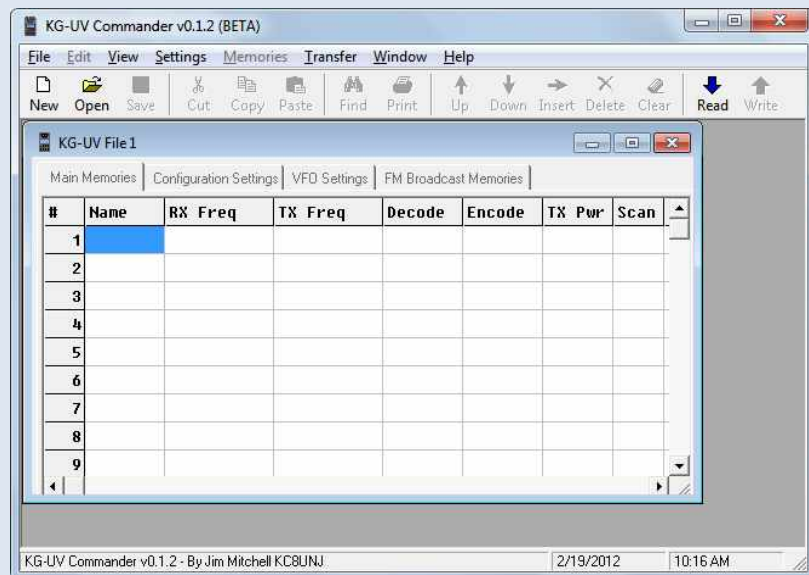
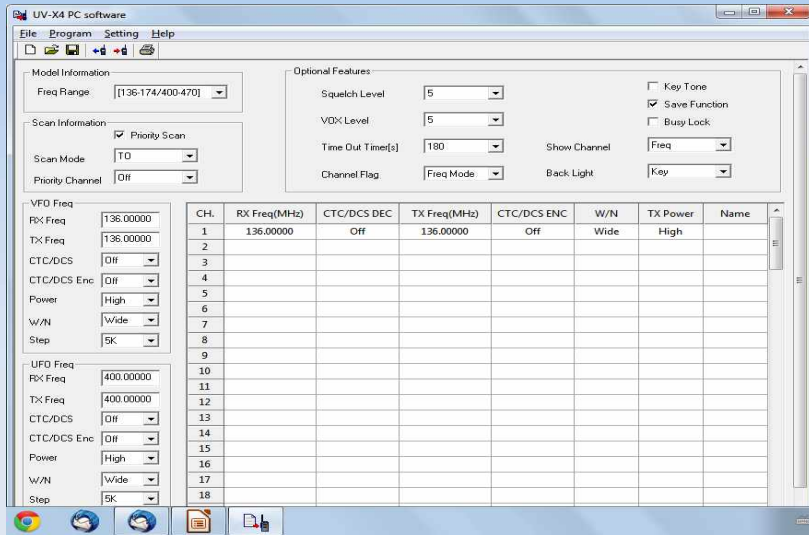
### Generic

Channel frequency  
Repeater offset  
CTCSS tone  
DCS setting  
Channel name  
Etc.



CHIRP is restricted to generic programming, but can easily exchange information.

# Specific programs



# Baofeng UV-3R

UV-X4 PC software

File Program Setting Help

Model Information  
Freq Range: [136-174/400-470]

Scan Information  
 Priority Scan  
Scan Mode: TO  
Priority Channel: Off

Optional Features  
Squelch Level: 5  
VOX Level: 5  
Time Out Timer[s]: 180  
Channel Flag: Freq Mode  
 Key Tone  
 Save Function  
 Busy Lock  
Show Channel: Freq  
Back Light: Key

VFO Freq  
RX Freq: 136.00000  
TX Freq: 136.00000  
CTC/DCS: Off  
CTC/DCS Enc: Off  
Power: High  
W/N: Wide  
Step: 5K

UFO Freq  
RX Freq: 400.00000  
TX Freq: 400.00000  
CTC/DCS: Off  
CTC/DCS Enc: Off  
Power: High  
W/N: Wide  
Step: 5K

CH.	RX Freq(MHz)	CTC/DCS DEC	TX Freq(MHz)	CTC/DCS ENC	W/N	TX Power	Name
1	136.00000	Off	136.00000	Off	Wide	High	
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

# UV-3R, frequency expansion

SETTING.INI

[setup]

com=1

searchcom=1

name=0

language=english

[ModelInfo]

Freq0=[136-174/400-470]

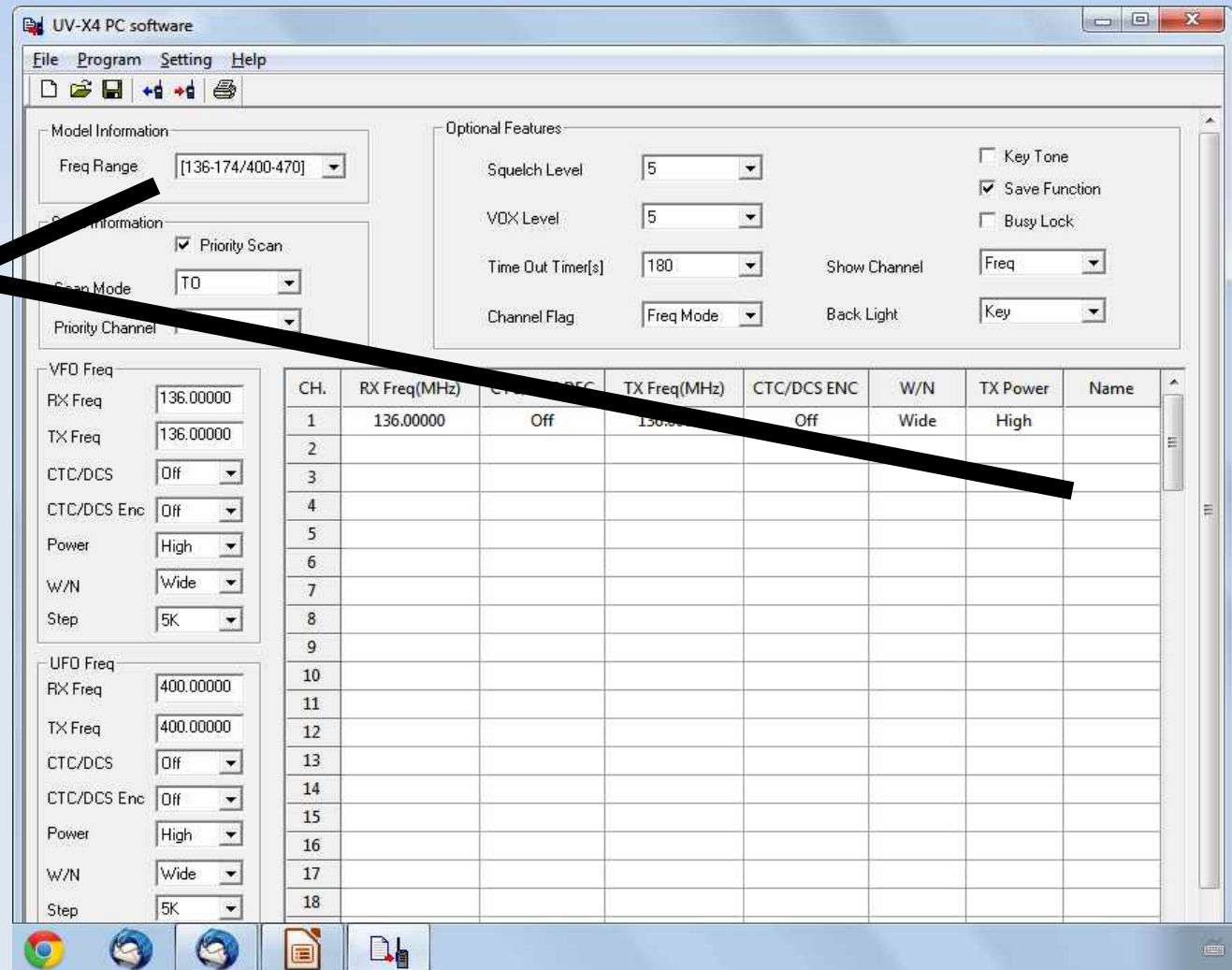
data0=6013401700400047

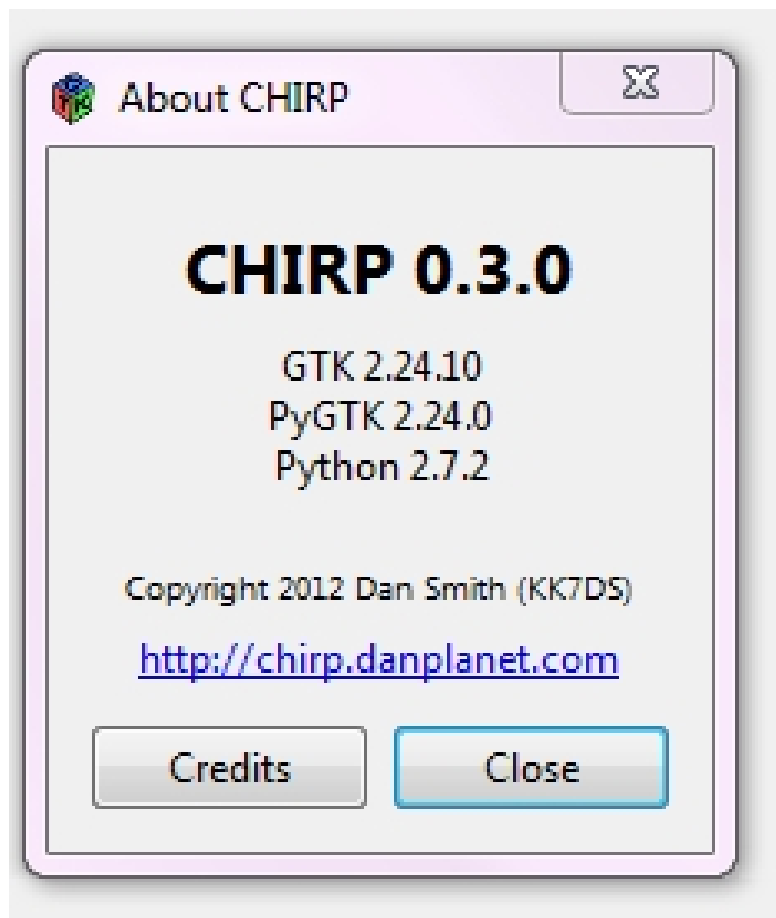
Freq1=[144-146/430-440]

data1=4014601400430044

Freq2=[144-148/430-450]

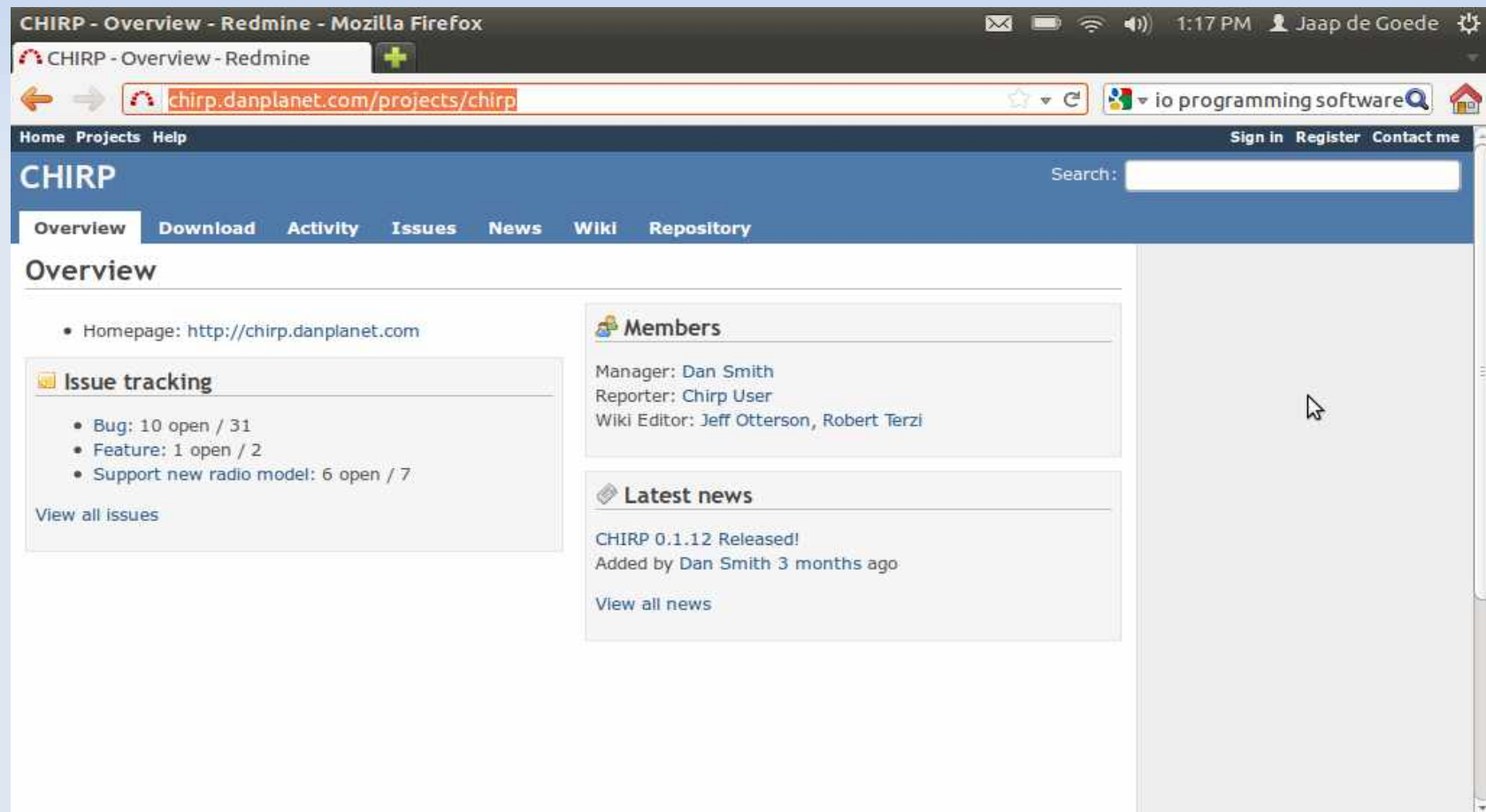
data2=4014801400430045





# CHIRP on the Internet

- <http://chirp.danplanet.com/projects/chirp>



The screenshot shows a web browser window displaying the CHIRP project overview page. The browser's address bar shows the URL <http://chirp.danplanet.com/projects/chirp>. The page features a navigation menu with links for Home, Projects, and Help, and a search bar. The main content area is titled "Overview" and includes a list of links (Overview, Download, Activity, Issues, News, Wiki, Repository). The "Overview" section contains a homepage link, an "Issue tracking" box with a list of open issues (Bug: 10 open / 31, Feature: 1 open / 2, Support new radio model: 6 open / 7), a "Members" box listing the Manager (Dan Smith), Reporter (Chirp User), and Wiki Editor (Jeff Otterson, Robert Terzi), and a "Latest news" box with a recent release (CHIRP 0.1.12 Released! Added by Dan Smith 3 months ago).

CHIRP - Overview - Redmine - Mozilla Firefox

CHIRP - Overview - Redmine

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

io programming software

Home Projects Help Sign in Register Contact me

## CHIRP

Search:

Overview Download Activity Issues News Wiki Repository

### Overview

- Homepage: <http://chirp.danplanet.com>

#### Issue tracking

- Bug: 10 open / 31
- Feature: 1 open / 2
- Support new radio model: 6 open / 7

[View all issues](#)

#### Members

Manager: Dan Smith  
Reporter: Chirp User  
Wiki Editor: Jeff Otterson, Robert Terzi

#### Latest news

CHIRP 0.1.12 Released!  
Added by Dan Smith 3 months ago

[View all news](#)

# CHIRP v0.1.0: Fadios

## Alinco

- DR-03T, 06T
- DR135T, 235T
- DR435T
- DJ596T

## Baofeng

- UV-3RE

## Jetstream

- JT220M

## Puxing

- PX-2R (UHF)
- PX-777

## Icom

- IC-2820H
- ID-800H, 880H
- IC-2200H
- IC-91/92AD
- IC-V/U82
- IC-2100H, 2720H
- IC-T70
- IC-Q7A
- IC-W32A
- IC-7000, 7200
- ID-32A
- ID-RP2000V/RP4000V/RP2V/RP2D

## Kenwood

- TH-D7A
- TM-D700, D710
- TM-V7A, V71A
- TH-F6A
- TH-D72
- TH-K2
- TM-271A

## Yaesu

- FT-2800M
- FT-7800R
- FT-7900R
- FT-8800R
- FT-8900R
- VX-3R, 5R, 6R, 7R, 8R
- FT-60R
- FT-817/857/897

## Wouxun

- KG-UVD1P/UV2D/UV3D



# CHIRP, system requirements

- CHIRP
  - Microsoft Windows 2000/XP/Vista/7
  - Apple Mac OS
  - Linux: Fedora, Ubuntu, ..
- USB- of Serial specific cable
  - Windows: USB-driver
  - Linux: USB to serial is standard



CHIRP runs fine with Linux.  
Even with a Pentium class CPU and 512 Megabyte memory!

# CHIRP, tips

- WINE (Linux WINDows Emulator)



- USBtoserial cable = /dev/ttyUSB0

- Associate WINE COM1 with Linux /dev/ttyUSB0

- In -s /dev/ttyUSB0 ~/.wine/dosdevices/com1

- Windows Prolific Driver

- Latest driver does not support counterfeit



- UBUNTU HAM programs

- <https://launchpad.net/~ubuntu-hams-updates/+archive/ppa>



# CHIRP, Windows (USB) COM port

The image shows a Windows 7 desktop environment. The Control Panel window is open to 'Hardware and Sound', with a search for 'device manager' in the search bar. The Device Manager window is open, showing a tree view of hardware categories. A 'Prolific USB-to-Serial Comm Port (COM4)' is listed under 'Ports (COM & LPT)'. Three grey callout boxes provide instructions: '1 Start device manager' points to the search bar, '2 Click (COM & LPT)' points to the 'Ports (COM & LPT)' category, and '3 Note COM port number' points to the 'Prolific USB-to-Serial Comm Port (COM4)' device.

Control Panel (3)

- Device Manager
- View devices and printers
- Update device drivers

device manager

1 Start device manager

2 Click (COM & LPT)

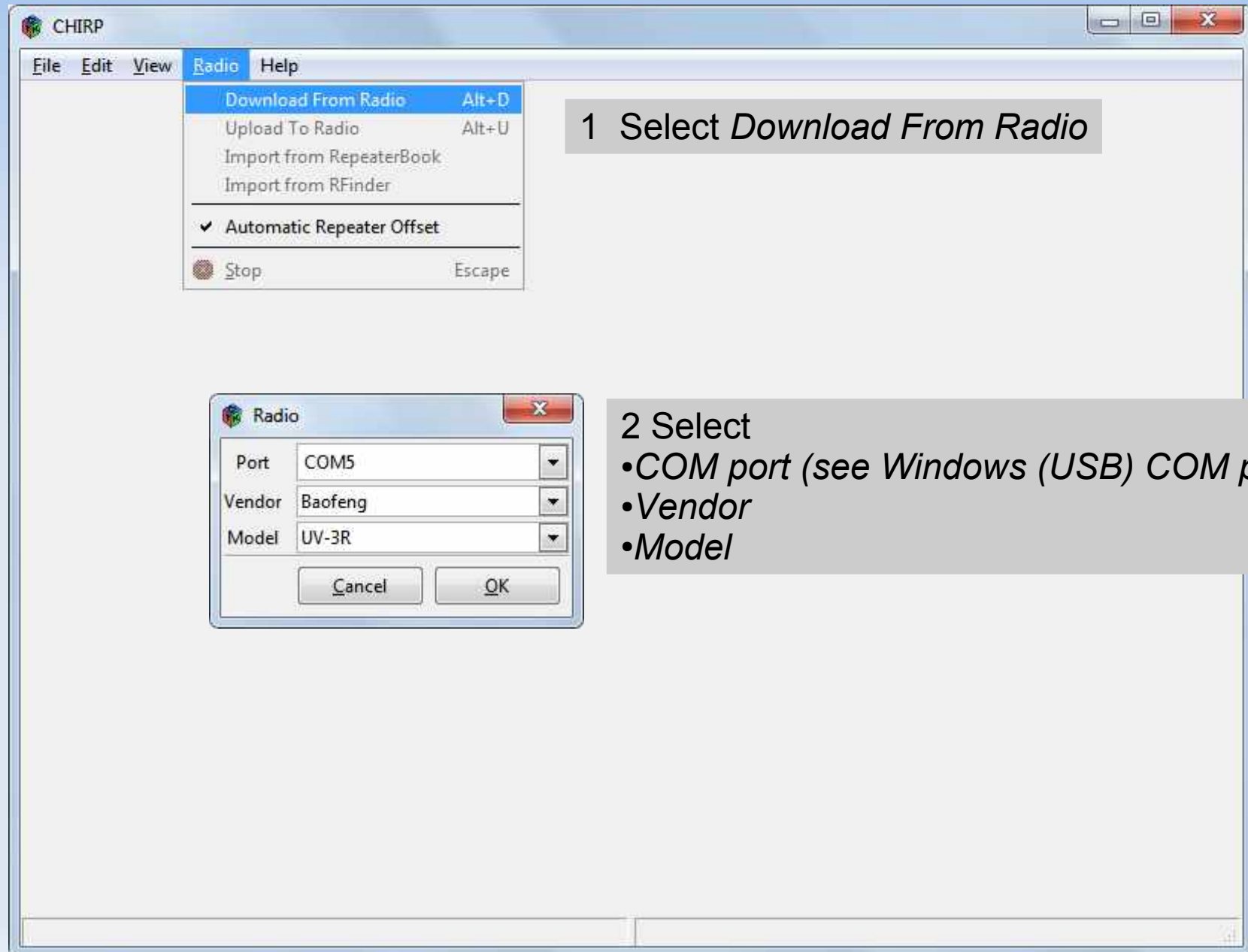
3 Note COM port number

12:20 PM  
3/4/2012

# CHIRP, programming

- Get data from radio(s), Data Sources, etc.
- Cut, Copy, Paste across tabs then save data
- Send modified data back down to radio(s)
- Export data to CSV for other program
- Each radio/Source opens in a separate Tab

# Get 8 ata from F radios



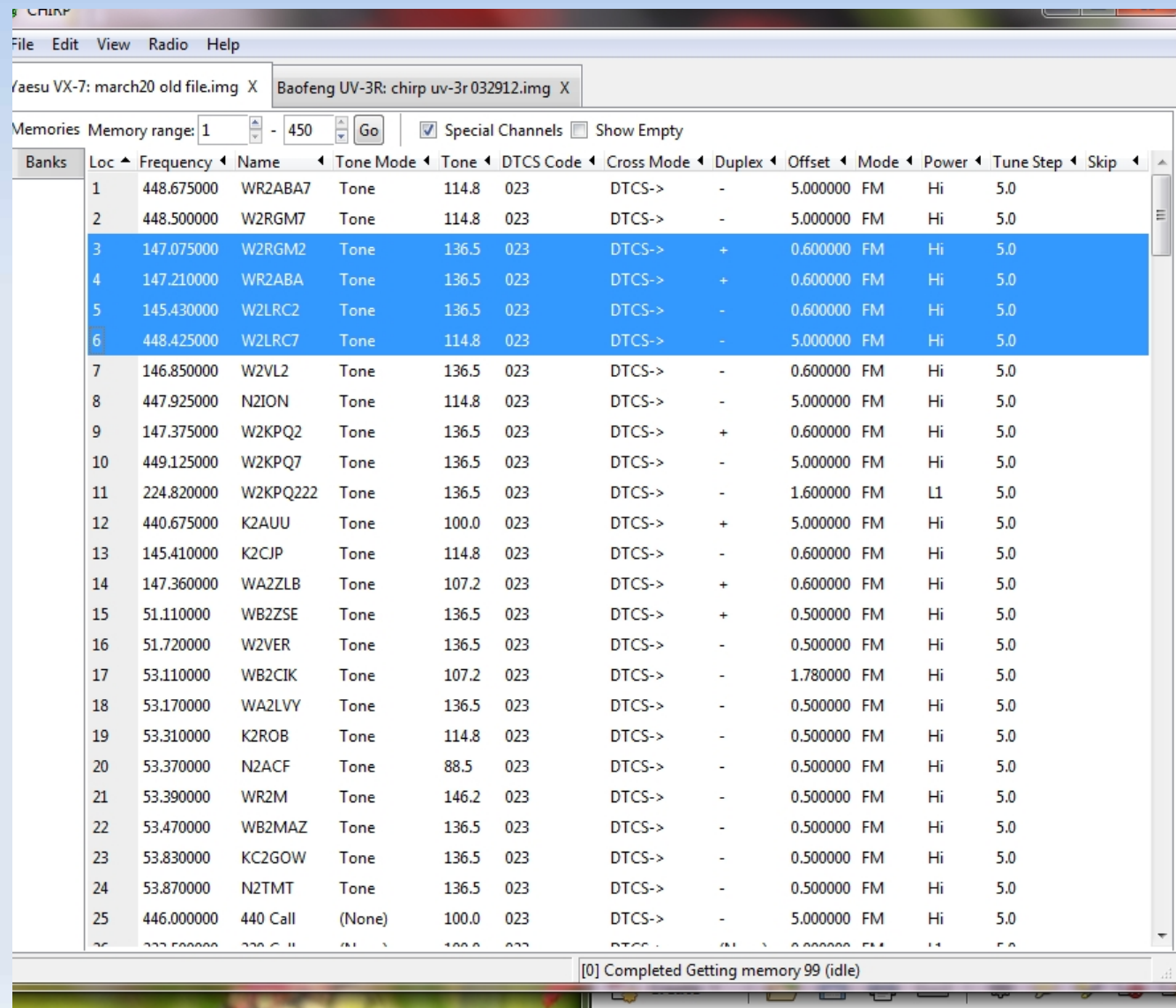
1 Select *Download From Radio*

2 Select

- *COM port (see Windows (USB) COM port)*
- *Vendor*
- *Model*

# A - Highlight and Copy Data

- Select the rows of data to copy from first source, Click on Copy under Edit



The screenshot shows a software window titled "CHIRP" with a menu bar (File, Edit, View, Radio, Help) and a toolbar. Below the toolbar, there are tabs for "Yaesu VX-7: march20 old file.img X" and "Baofeng UV-3R: chirp uv-3r 032912.img X". A "Memories" section shows a range of 1 to 450 with a "Go" button and checkboxes for "Special Channels" and "Show Empty". The main area is a table of memory banks. Rows 3 through 6 are highlighted in blue. The table has the following columns: Banks, Loc, Frequency, Name, Tone Mode, Tone, DTCS Code, Cross Mode, Duplex, Offset, Mode, Power, and Tune Step. The status bar at the bottom indicates "[0] Completed Getting memory 99 (idle)".

Banks	Loc	Frequency	Name	Tone Mode	Tone	DTCS Code	Cross Mode	Duplex	Offset	Mode	Power	Tune Step	Skip
1		448.675000	WR2ABA7	Tone	114.8	023	DTCS->	-	5.000000	FM	Hi	5.0	
2		448.500000	W2RGM7	Tone	114.8	023	DTCS->	-	5.000000	FM	Hi	5.0	
3		147.075000	W2RGM2	Tone	136.5	023	DTCS->	+	0.600000	FM	Hi	5.0	
4		147.210000	WR2ABA	Tone	136.5	023	DTCS->	+	0.600000	FM	Hi	5.0	
5		145.430000	W2LRC2	Tone	136.5	023	DTCS->	-	0.600000	FM	Hi	5.0	
6		448.425000	W2LRC7	Tone	114.8	023	DTCS->	-	5.000000	FM	Hi	5.0	
7		146.850000	W2VL2	Tone	136.5	023	DTCS->	-	0.600000	FM	Hi	5.0	
8		447.925000	N2ION	Tone	114.8	023	DTCS->	-	5.000000	FM	Hi	5.0	
9		147.375000	W2KPQ2	Tone	136.5	023	DTCS->	+	0.600000	FM	Hi	5.0	
10		449.125000	W2KPQ7	Tone	136.5	023	DTCS->	-	5.000000	FM	Hi	5.0	
11		224.820000	W2KPQ222	Tone	136.5	023	DTCS->	-	1.600000	FM	L1	5.0	
12		440.675000	K2AUU	Tone	100.0	023	DTCS->	+	5.000000	FM	Hi	5.0	
13		145.410000	K2CJP	Tone	114.8	023	DTCS->	-	0.600000	FM	Hi	5.0	
14		147.360000	WA2ZLB	Tone	107.2	023	DTCS->	+	0.600000	FM	Hi	5.0	
15		51.110000	WB2ZSE	Tone	136.5	023	DTCS->	+	0.500000	FM	Hi	5.0	
16		51.720000	W2VER	Tone	136.5	023	DTCS->	-	0.500000	FM	Hi	5.0	
17		53.110000	WB2CIK	Tone	107.2	023	DTCS->	-	1.780000	FM	Hi	5.0	
18		53.170000	WA2LVY	Tone	136.5	023	DTCS->	-	0.500000	FM	Hi	5.0	
19		53.310000	K2ROB	Tone	114.8	023	DTCS->	-	0.500000	FM	Hi	5.0	
20		53.370000	N2ACF	Tone	88.5	023	DTCS->	-	0.500000	FM	Hi	5.0	
21		53.390000	WR2M	Tone	146.2	023	DTCS->	-	0.500000	FM	Hi	5.0	
22		53.470000	WB2MAZ	Tone	136.5	023	DTCS->	-	0.500000	FM	Hi	5.0	
23		53.830000	KC2GOW	Tone	136.5	023	DTCS->	-	0.500000	FM	Hi	5.0	
24		53.870000	N2TMT	Tone	136.5	023	DTCS->	-	0.500000	FM	Hi	5.0	
25		446.000000	440 Call	(None)	100.0	023	DTCS->	-	5.000000	FM	Hi	5.0	

# B- Highlight and Copy Data

- Click on Copy under Edit, Then click on Radio Tab you want to add it to

The screenshot shows the CHIRP software interface. The 'Edit' menu is open, showing options: Cut (Ctrl+X), Copy (Ctrl+C), Paste (Ctrl+V), Delete, Move Up (Ctrl+Up), Move Down (Ctrl+Down), and Exchange (Shift+Ctrl+X). The main window displays a list of radio channels with the following columns: ID, Frequency, Call Sign, Tone Mode, Tone, DTCS Code, Cross Mode, Duplex, Offset, Mode, Power, and Tune Step. The channel with ID 6 is highlighted in blue.

ID	Frequency	Call Sign	Tone Mode	Tone	DTCS Code	Cross Mode	Duplex	Offset	Mode	Power	Tune Step
7			Tone	114.8	023	DTCS->	-	5.000000	FM	Hi	5.0
4	147.210000	WR2ABA	Tone	136.5	023	DTCS->	+	0.600000	FM	Hi	5.0
5	145.430000	W2LRC2	Tone	136.5	023	DTCS->	-	0.600000	FM	Hi	5.0
6	448.425000	W2LRC7	Tone	114.8	023	DTCS->	-	5.000000	FM	Hi	5.0
7	146.850000	W2VL2	Tone	136.5	023	DTCS->	-	0.600000	FM	Hi	5.0
8	447.925000	N2ION	Tone	114.8	023	DTCS->	-	5.000000	FM	Hi	5.0
9	147.375000	W2KPQ2	Tone	136.5	023	DTCS->	+	0.600000	FM	Hi	5.0
10	449.125000	W2KPQ7	Tone	136.5	023	DTCS->	-	5.000000	FM	Hi	5.0
11	224.820000	W2KPQ222	Tone	136.5	023	DTCS->	-	1.600000	FM	L1	5.0
12	440.675000	K2AUU	Tone	100.0	023	DTCS->	+	5.000000	FM	Hi	5.0

# 7 - @ Why 'UbX' DUghY Data

- Click on Úæ c under Edit,

The screenshot shows the CHIRP software window with the 'Edit' menu open. The menu options are:

- Cut (Ctrl+X)
- Copy (Ctrl+C)
- Paste (Ctrl+V)
- Delete (Delete)
- Move Up (Ctrl+Up)
- Move Down (Ctrl+Down)
- Exchange (Shift+Ctrl+X)

The main window displays a table of radio channels with the following columns: Name, Tone, ToneSql, DTCs Code, DTCs Pol, Cross Mode, Duplex, Offset, Mode, and Power. The table contains 22 rows of data, with row 16 highlighted in blue.

Name	Tone	ToneSql	DTCs Code	DTCs Pol	Cross Mode	Duplex	Offset	Mode	Power		
1	114.8	88.5	023	RN	Tone->Tone	-	5.000000	FM	High		
2	114.8	88.5	023	NN	Tone->Tone	-	5.000000	FM	High		
3	136.5	88.5	023	NN	Tone->Tone	+	0.600000	FM	High		
4	147.210000	Tone	136.5	88.5	023	NN	Tone->Tone	+	0.600000	FM	High
5	145.430000	Tone	136.5	88.5	023	NN	Tone->Tone	-	0.600000	FM	High
6	448.425000	Tone	218.1	88.5	023	RN	Tone->Tone	-	5.000000	FM	High
7	146.850000	Tone	136.5	88.5	023	NN	Tone->Tone	-	0.600000	FM	High
8	447.925000	Tone	114.8	88.5	023	RN	Tone->Tone	-	5.000000	FM	High
9	147.375000	Tone	136.5	88.5	023	NN	Tone->Tone	+	0.600000	FM	High
10	449.125000	Tone	136.5	88.5	023	NN	Tone->Tone	-	5.000000	FM	High
11	440.675000	Tone	136.5	88.5	023	NN	Tone->Tone	+	5.000000	FM	High
12	145.410000	Tone	114.8	88.5	023	RN	Tone->Tone	-	0.600000	FM	High
13	147.360000	Tone	107.2	88.5	023	NN	Tone->Tone	+	0.600000	FM	High
14	146.520000	(None)	88.5	88.5	023	RR	Tone->Tone	(None)	0.000000	FM	High
15	448.495000	Tone	114.8	88.5	023	NN	Tone->Tone	-	5.000000	FM	High
16	0.000000	(None)	88.5	88.5	023	NN	Tone->Tone	(None)	0.600000	FM	
17	0.000000	(None)	88.5	88.5	023	NN	Tone->Tone	(None)	0.600000	FM	
18	0.000000	(None)	88.5	88.5	023	NN	Tone->Tone	(None)	0.600000	FM	
19	0.000000	(None)	88.5	88.5	023	NN	Tone->Tone	(None)	0.600000	FM	
20	0.000000	(None)	88.5	88.5	023	NN	Tone->Tone	(None)	0.600000	FM	
21	0.000000	(None)	88.5	88.5	023	NN	Tone->Tone	(None)	0.600000	FM	
22	0.000000	(None)	88.5	88.5	023	NN	Tone->Tone	(None)	0.600000	FM	

# Send BYk '8 ata to F radio

The screenshot shows the CHIRP software interface. The 'Radio' menu is open, with 'Upload To Radio' selected. A 'Radio' dialog box is also open, showing the following settings:

- Port: COM5
- Vendor: Baofeng
- Model: UV-3R

Buttons for 'Cancel' and 'OK' are visible in the dialog box.

**1 Select: Upload To Radio**

**2 Select:**

- COM port (see Windows (USB) COM port)

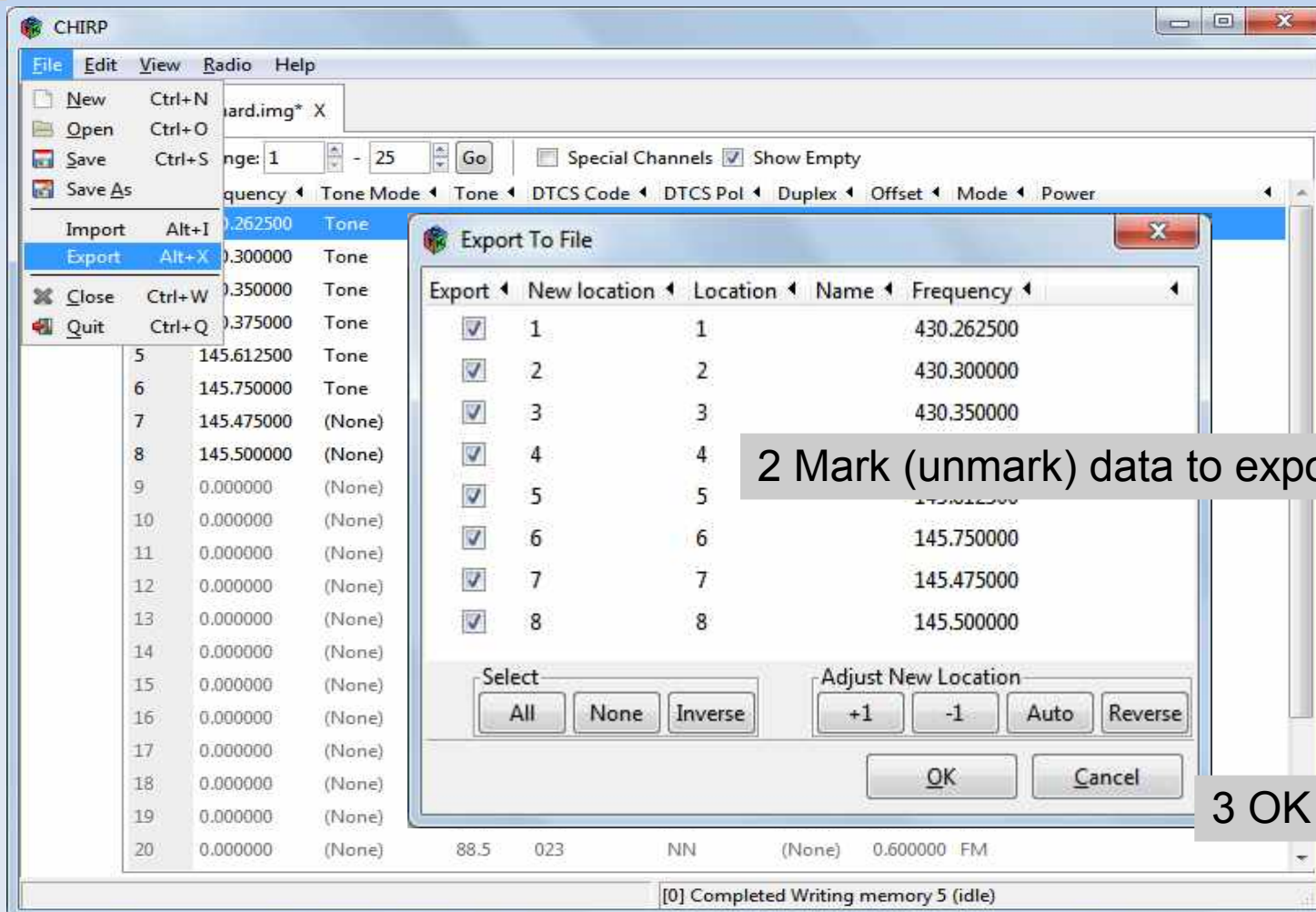
Loc	CS Code	DTCS Pol	Duplex	Offset	Mode	Power			
1									
2		NN	+	1.600000	NFM	High			
3	430.350000	Tone	88.5	023	NN	+	1.600000	NFM	High
4	430.375000	Tone	88.5	023	NN	+	1.600000	NFM	High
5	145.612500	Tone	88.5	023	NN	-	0.600000	NFM	High
6	145.75				NN	-	0.600000	NFM	High
7	145.47								
8	145.50								
9	0.0000								
10	0.0000								
11	0.0000								
12	0.0000								
13	0.000000	(None)	88.5	023	NN	(None)	0.600000	FM	
14	0.000000	(None)	88.5	023	NN	(None)	0.600000	FM	
15	0.000000	(None)	88.5	023	NN	(None)	0.600000	FM	
16	0.000000	(None)	88.5	023	NN	(None)	0.600000	FM	
17	0.000000	(None)	88.5	023	NN	(None)	0.600000	FM	
18	0.000000	(None)	88.5	023	NN	(None)	0.600000	FM	
19	0.000000	(None)	88.5	023	NN	(None)	0.600000	FM	
20	0.000000	(None)	88.5	023	NN	(None)	0.600000	FM	

[0] Completed Writing memory 5 (idle)

# El port data to CSV

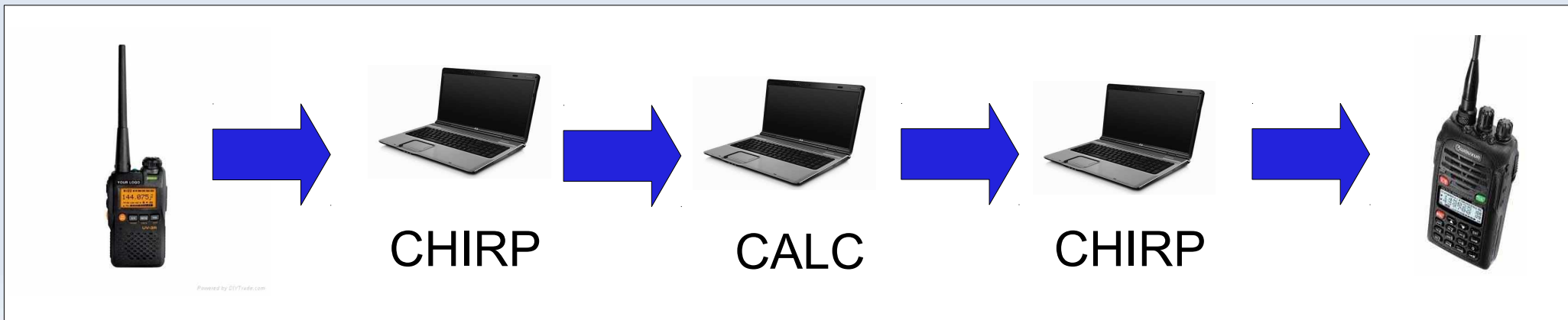
1 Select:

- File
- Export



# Exchanging data

- Comma Separat^d Value (CSV)
  - Example
    - 145.475,PI4GAZ, low,88.5
  - File name ends in ".CSV"
    - Microsoft Excel
    - LibreOffice Calc
    - CHIRP

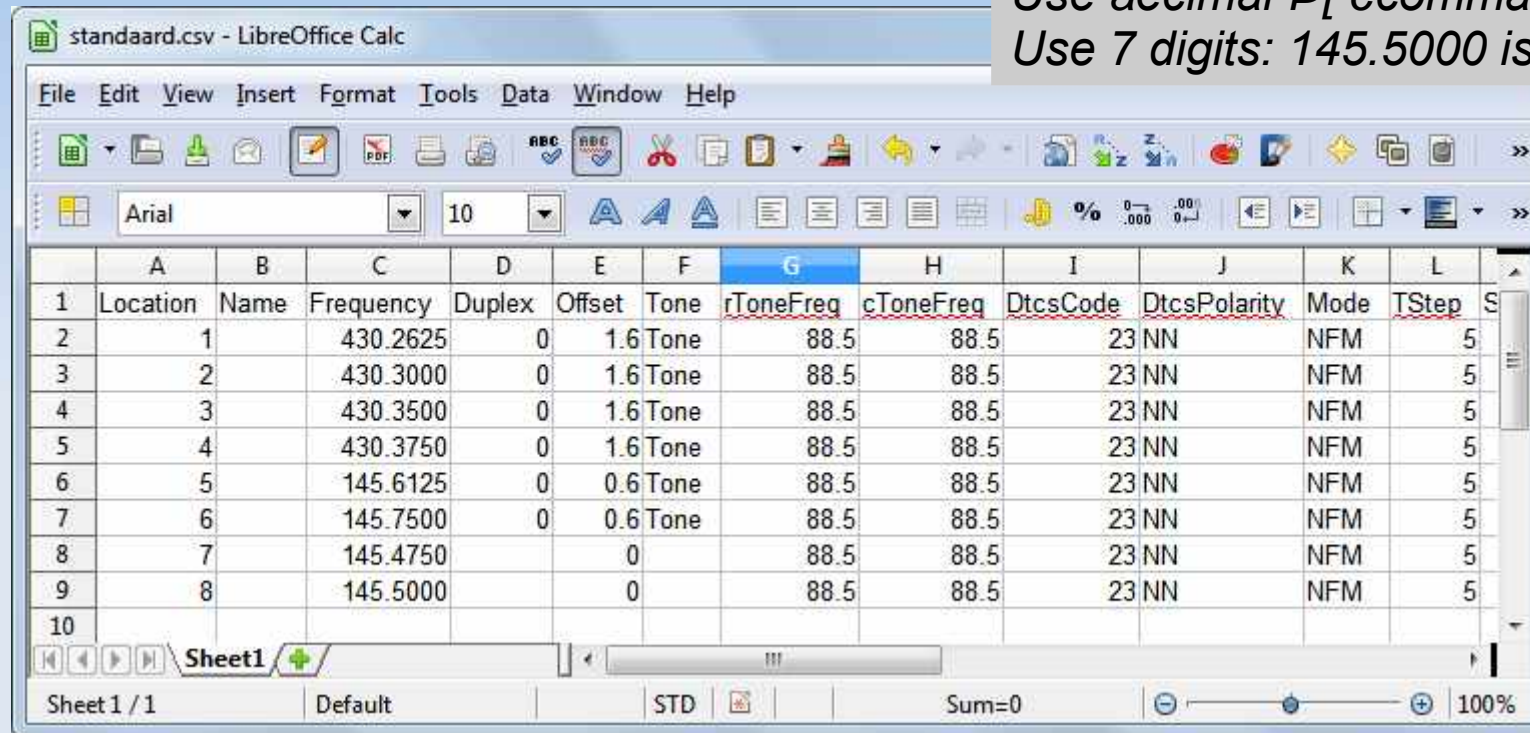


# CSV examples

Attention:

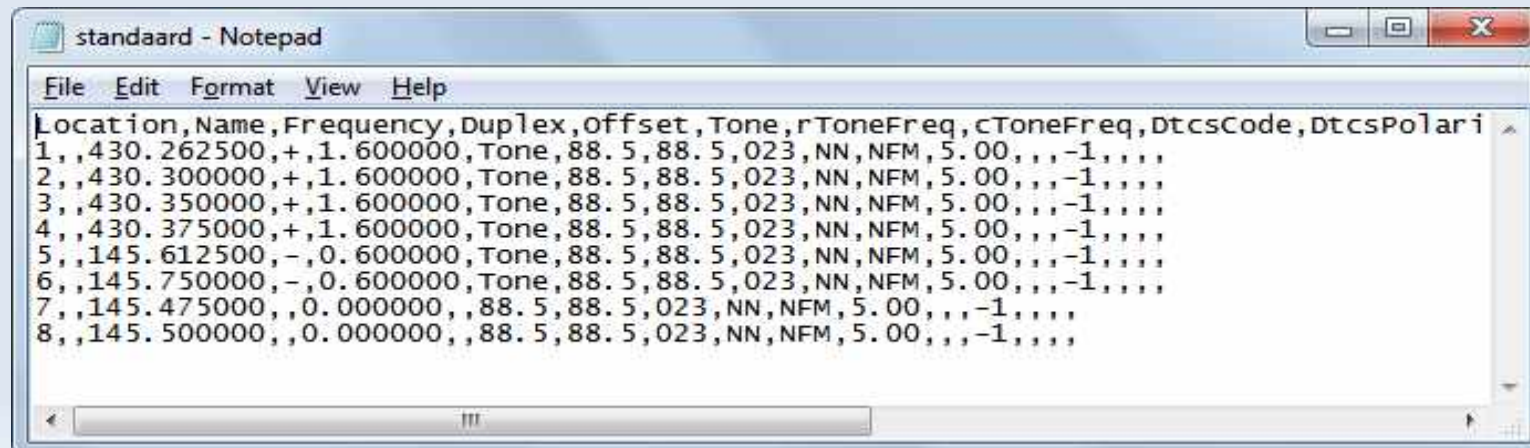
Use a decimal point [comma]

Use 7 digits: 145.5000 is **NOT** 145.5



standaard.csv - LibreOffice Calc

	A	B	C	D	E	F	G	H	I	J	K	L	S
1	Location	Name	Frequency	Duplex	Offset	Tone	rToneFreq	cToneFreq	DtcsCode	DtcsPolarity	Mode	TStep	S
2	1		430.2625	0	1.6	Tone	88.5	88.5	23	NN	NFM	5	
3	2		430.3000	0	1.6	Tone	88.5	88.5	23	NN	NFM	5	
4	3		430.3500	0	1.6	Tone	88.5	88.5	23	NN	NFM	5	
5	4		430.3750	0	1.6	Tone	88.5	88.5	23	NN	NFM	5	
6	5		145.6125	0	0.6	Tone	88.5	88.5	23	NN	NFM	5	
7	6		145.7500	0	0.6	Tone	88.5	88.5	23	NN	NFM	5	
8	7		145.4750		0		88.5	88.5	23	NN	NFM	5	
9	8		145.5000		0		88.5	88.5	23	NN	NFM	5	
10													



standaard - Notepad

```
Location,Name,Frequency,Duplex,Offset,Tone,rToneFreq,cToneFreq,DtcsCode,DtcsPolarity,Mode,TStep,S
1,,430.262500,+1.600000,Tone,88.5,88.5,023,NN,NFM,5.00,,, -1,,,,
2,,430.300000,+1.600000,Tone,88.5,88.5,023,NN,NFM,5.00,,, -1,,,,
3,,430.350000,+1.600000,Tone,88.5,88.5,023,NN,NFM,5.00,,, -1,,,,
4,,430.375000,+1.600000,Tone,88.5,88.5,023,NN,NFM,5.00,,, -1,,,,
5,,145.612500,-0.600000,Tone,88.5,88.5,023,NN,NFM,5.00,,, -1,,,,
6,,145.750000,-0.600000,Tone,88.5,88.5,023,NN,NFM,5.00,,, -1,,,,
7,,145.475000,,0.000000,,88.5,88.5,023,NN,NFM,5.00,,, -1,,,,
8,,145.500000,,0.000000,,88.5,88.5,023,NN,NFM,5.00,,, -1,,,,
```

# Conclusion

- Specific programs
  - Every radio uses a different program
  - All functions are programmable
  - Only can exchange between same radio
- Generic CHIRP program
  - One program for any radio
  - Only radio channels programmable
  - Easy to exchange between different radios
- Not only Microsoft Windows
  - Linux and Apple work as well

## Supported Radio Models 'Ug'cZ' !% !%

---

### AnyTone

- AT-5888UV (*in daily builds*)

### Alinco

- DR-03T
- DR-06T
- DR135T
- DR235T
- DR435T
- DJ596T
- DJ175T

### Baofeng

- F-11 (*in daily builds*)
- UV-3R
- UV-5R

### 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 (*in daily builds*)

### Jetstream

- JT220M

### Kenwood

- TH-D7A/G
- TH-D72
- TH-F6A
- TH-F7E
- TH-K2
- TK-7102/8102/7108/8108 (*in daily builds*)
- TM-271A/281A
- TM-D700
- TM-D710
- TM-G707
- TM-V7A
- TM-V71A

### Puxing

- PX-2R (UHF)
- PX-777

### TYT

- TH-UV3R
- TH-UVF1

### Yaesu

- FT-60R
- FT-817/ND
- FT-857/D
- FT-897
- FT-1802M
- FT-2800M
- FT-7800R
- FT-7900R
- FT-8800R
- FT-8900R
- FTM-350R (*in daily builds*)
- VX-3R
- VX-5R
- VX-6R
- VX-7R
- VX-8R

### Wouxun

- KG-UVD1P/UV2D/UV3D
- KG-UV6D/UV6X

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## Other Data Sources

## File Formats

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

## Internet

- [RadioReference](#)
- [RepeaterBook](#)
- [przemienniki.net](#) (*in daily builds*)
- [RFinder](#)

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Thank you!