Radio Programming

Using Chirp and RTSystems

Darren Kalmbach (KC0ZIE) & Joe Hawley (KD0TYU)

Radio Programming

This is a ‘fishing’ lesson

These are the basics

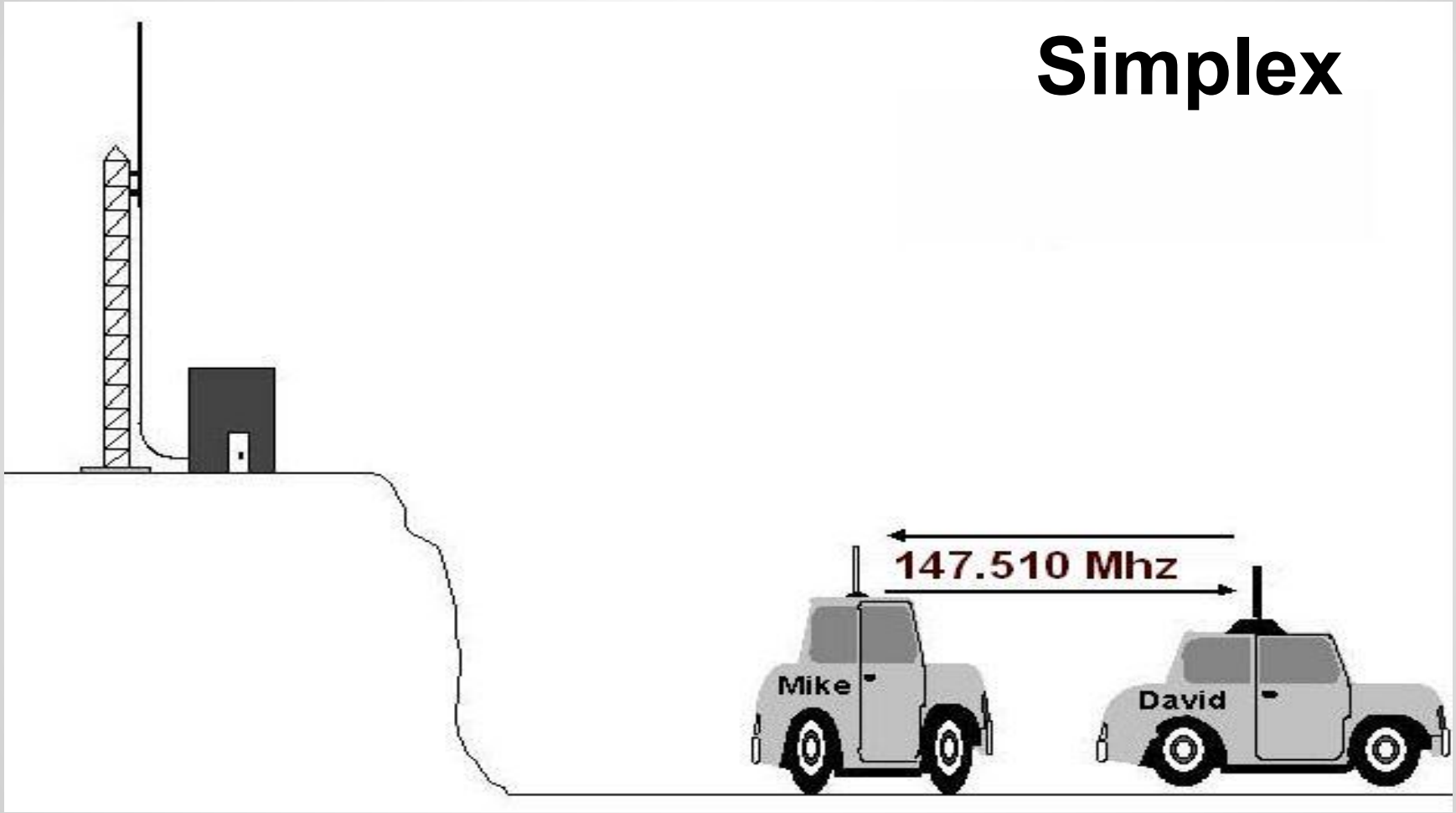
Using CHIRP and RTSystems

Quick Review

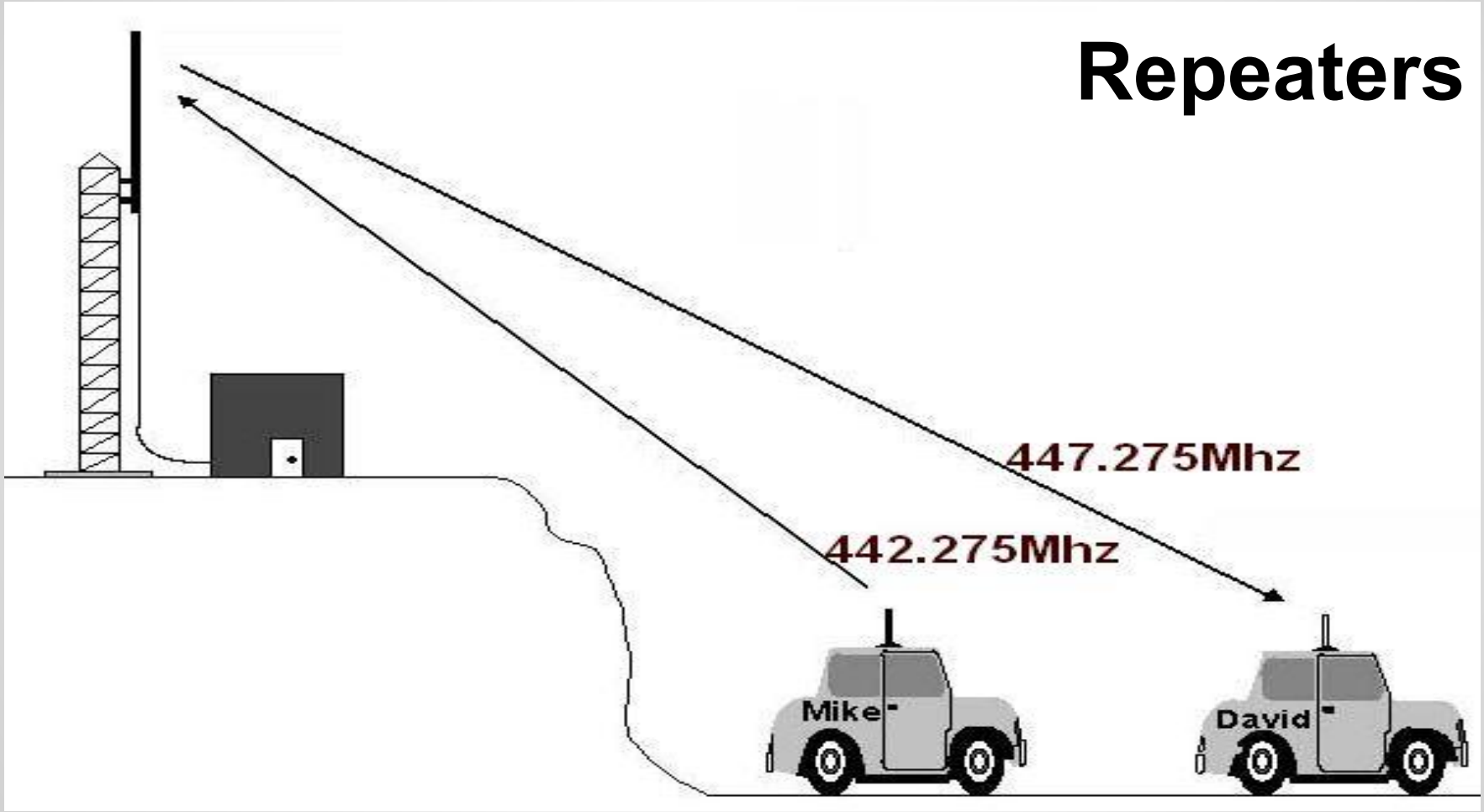
Simplex

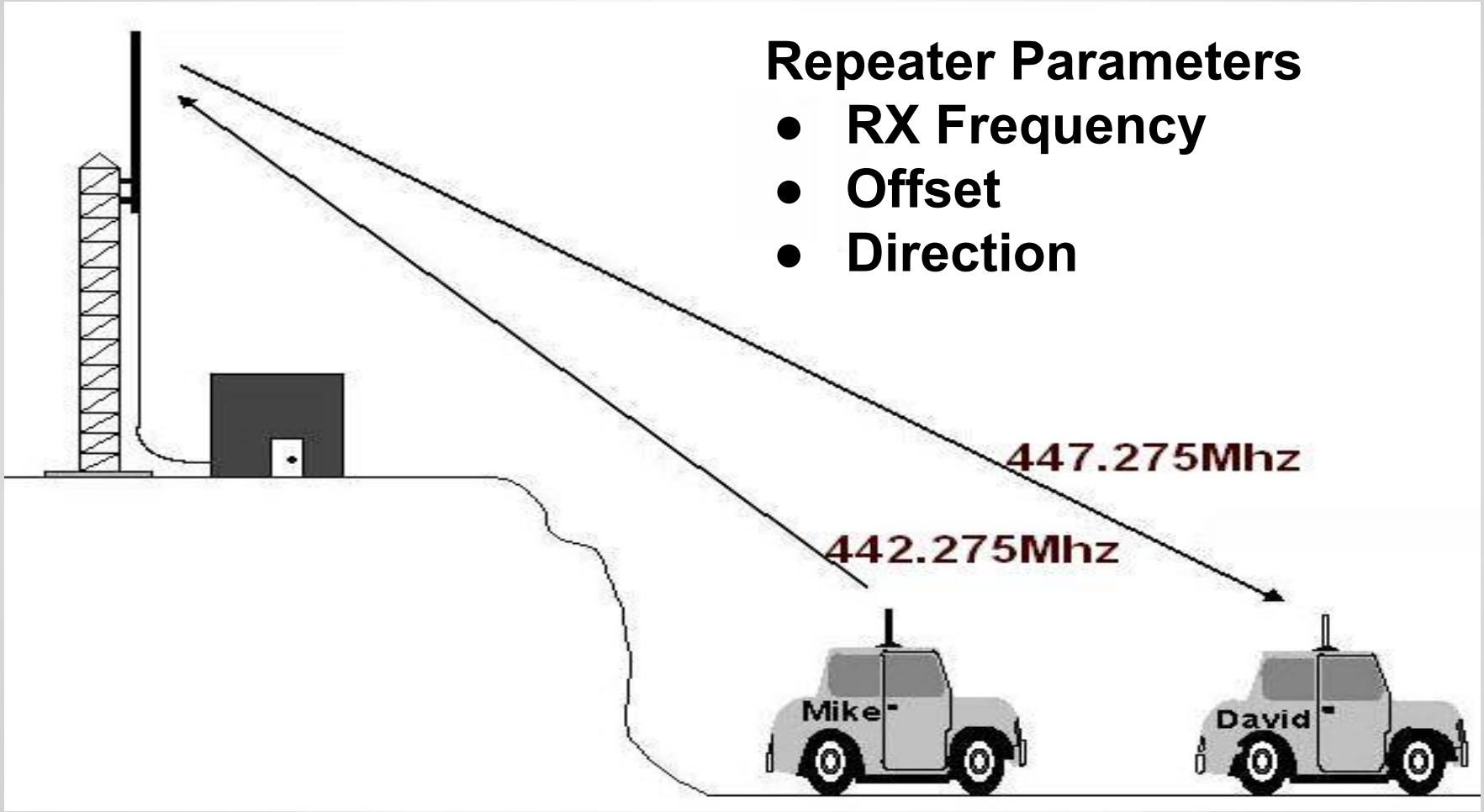
Repeaters

Simplex



Repeaters




Repeater Parameters
● RX Frequency
● Offset
● Direction
447.275Mhz
442.275Mhz
Mike
David

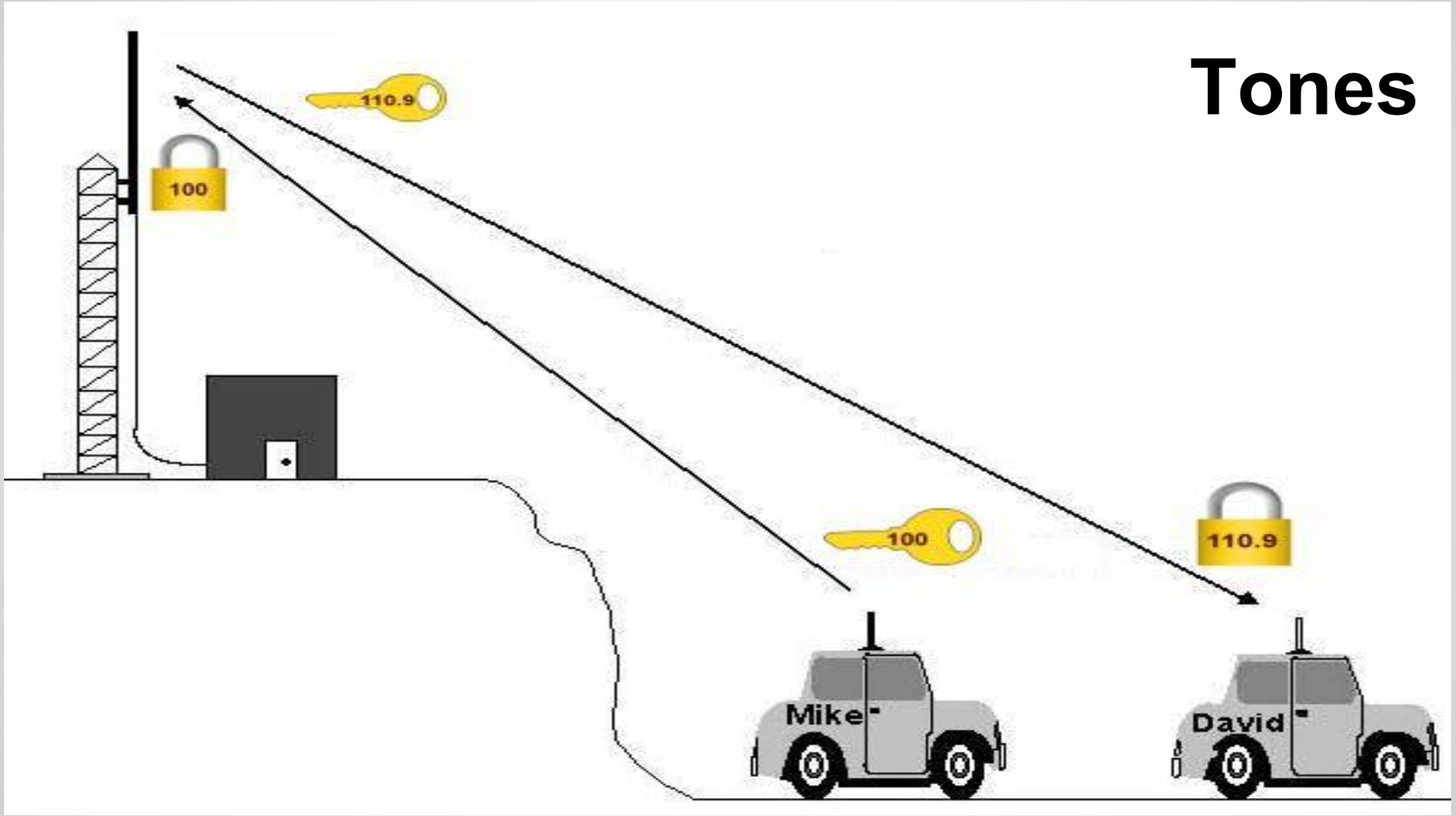
Offsets

- How to get from RX to TX
- Standards
  - 2M: + or - 600kHz
  - 1.25M: -1.6MHz
  - 70cm: + or - 5MHz
- Non-standard - called “odd split”

Tones

- Act like keys to a lock
- Two types
  - CTCSS / PL
  - DCS
- Normally same tone is used for RX and TX
  - Configured individually
  - RX Tone not needed outside high RF areas
- Some radios can scan for tones
- Can be used for simplex too

Tones



Repeater Listings - ARRL

NORTH FRONT RANGE					
Estes Park	146.6850	–	O 123.0l	KCØKXH	EVARC
Fort Collins	145.1150	–	O 100.0ers WXx	WØUPS	NCARC
Fort Collins	147.3600	+	O 100.0 (CA)	WØQEY	CSUARC
Greeley	146.8500	–	O 100.0 (CA)ersWX	WØUPS	NCARC
Hudson	147.3300	+	O 100.0/100.0 (CA)	WØTX	DRC
Loveland	145.1750	–	O 100.0/100.0 (CA)e	KN6VV	KN6VV

Repeater Listings - ARES

Colorado Amateur Radio Emergency Service® Region 3 District 2 Channel Utilization						
Channel	**Frequency**	**Offset**	**Tone**	**Owned**	**Assignment**	**Remarks**
1	145.115	-0.6	100	NCARC	Secondary Operations	Horsetooth Mountain
2	447.275	-5.0	100	NCARC	Primary Operations and Net Control	Horsetooth Mountain
3	448.025	-5.0	100	NCARC	Primary Operations and Net Control	Budweiser Event Center
4	147.360	+0.6	100	CSU	Resource Net	Colorado State University
5	147.195	+0.6	100	LRA	Secondary Operations	West of Loveland
6	449.575	-5.0	100	LRA	Secondary Operations	West of Loveland
7	146.625	-0.6	100	NCARC	Secondary Operations	Buckhorn Mountain
8	447.700	-5.0	100	NCARC	Secondary Operations	Buckhorn Mountain
9	146.850	-0.6	100	NCARC	Secondary Operations	North of Greeley
10	449.850	-5.0	100	CSU	Secondary Operations	Colorado State University

Repeater Listings - NCARC

Frequency Offset	Tone (in / out)	Call / Location	Info
2 Meter			
144.390		WØUPS-5 / Horsetooth Mtn.	APRS Simplex
145.115 -	(100.0/110.9)	WØUPS / Horsetooth Mtn.	EchoLink Node 4236
146.850 -	(100.0/100.0)	WØUPS / UNC Campus - Greeley	
146.625 -	(100.0/100.0)	WØUPS / Buckhorn Mtn.	May be linked with 447.700 & 224.840 SkyWarn
1.25 Meter			
224.520 -	(100.0/100.0)	WØUPS / Horsetooth Mtn.	
224.840 -	(100.0/100.0)	WØUPS / Buckhorn Mtn.	May be linked with 146.625 & full time with 447.700

Programming

What you need

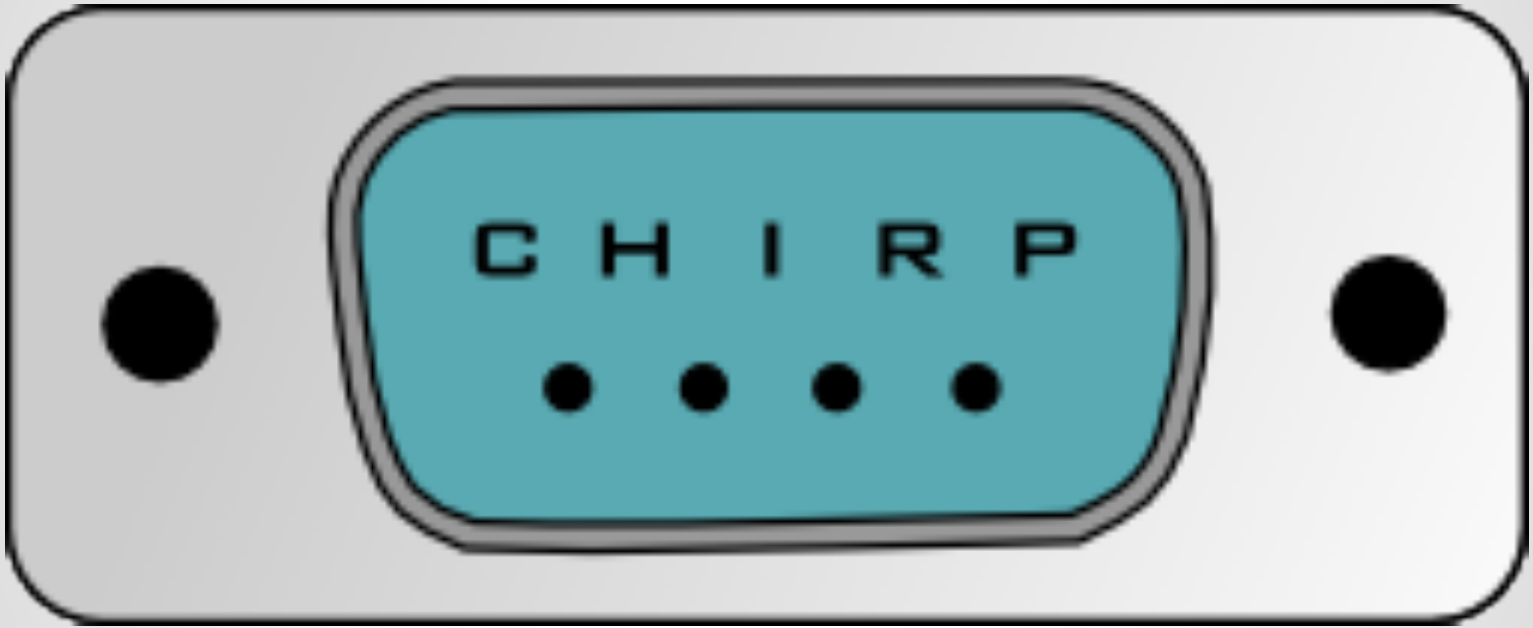
Radio

Programming cable

Computer

Software

- Chirp
- RTSystems


CHIRP

Chirp

Download free from: *http://chirp.danplanet.com*

Supports lots of radios

Opensource

Need your own cable

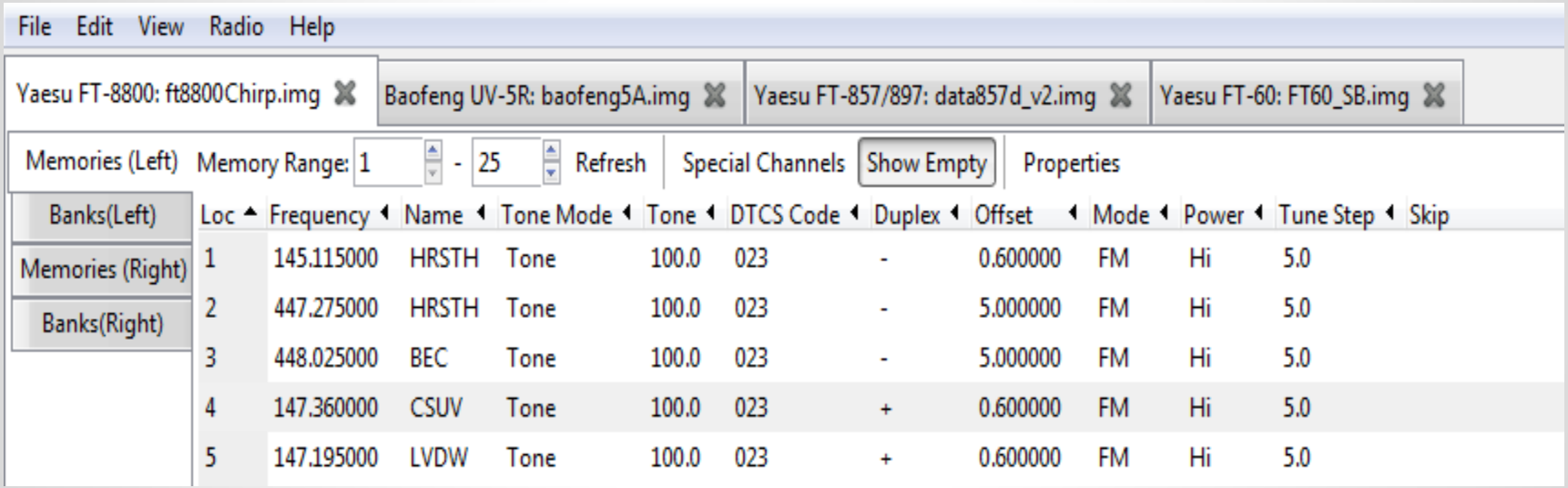
Supported on Windows, Mac, Linux, Live CD

Cables

Watch out for counterfeit usb cables!!!!

Best practice is to get serial radio cables and one good quality usb->serial converter

Chirp Main Window



Tone Mode

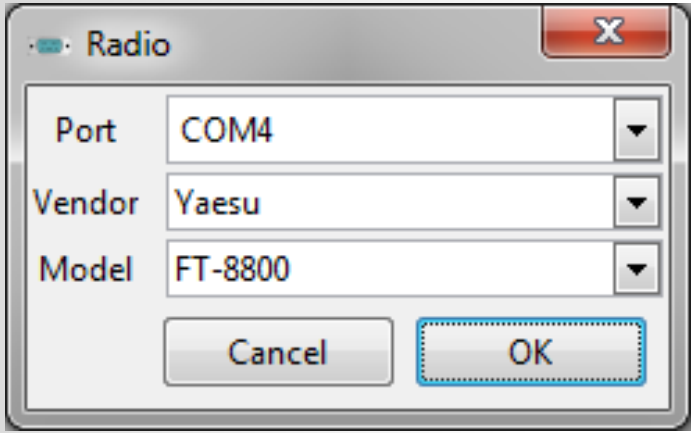
This sets the mode used to transmit or receive squelch tones (or related selective calling technologies). The following explains what the options means:

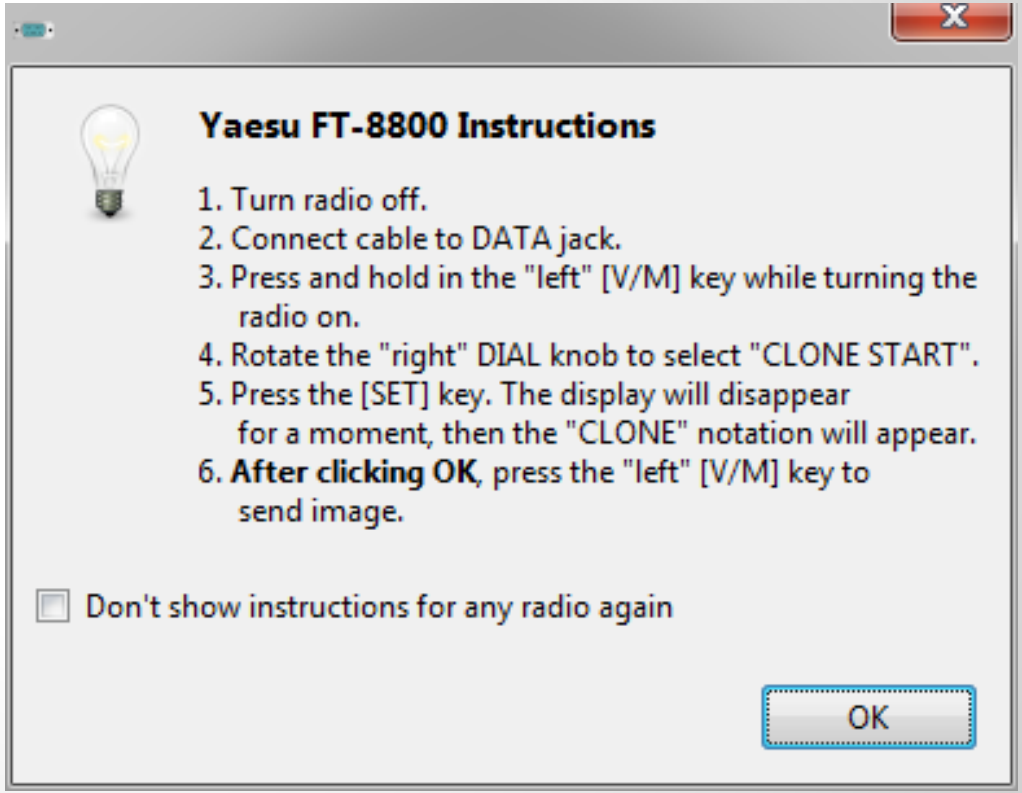
- (None): No tone or code is transmitted, receive squelch is open or carrier-triggered.
- Tone: A single CTCSS tone is transmitted, receive squelch is open or carrier-triggered. The tone used is that which is set in the Tonecolumn.
- TSQL: A single CTCSS tone is transmitted, receive squelch is tone-coded to the same tone. The tone used is that which is set in the ToneSqlcolumn.
- 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.

Normal Process

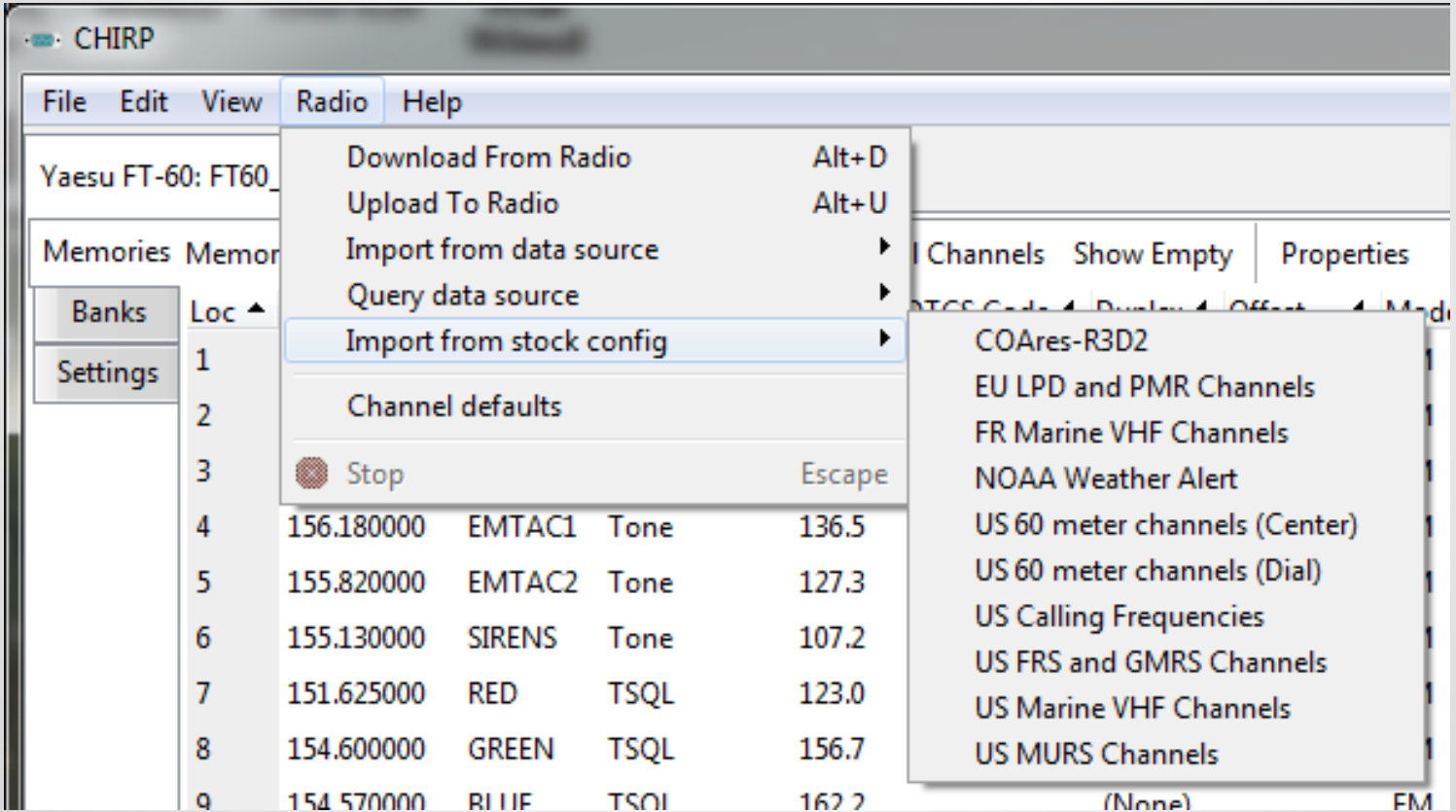
1. ‘Download from Radio’
2. Edit channels (can use stock configs)
3. Edit options
4. Save to disk
5. ‘Upload to Radio’

‘Download’ from radio





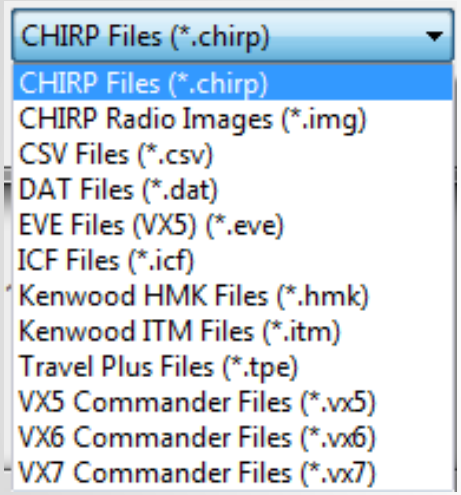
Stock Configs

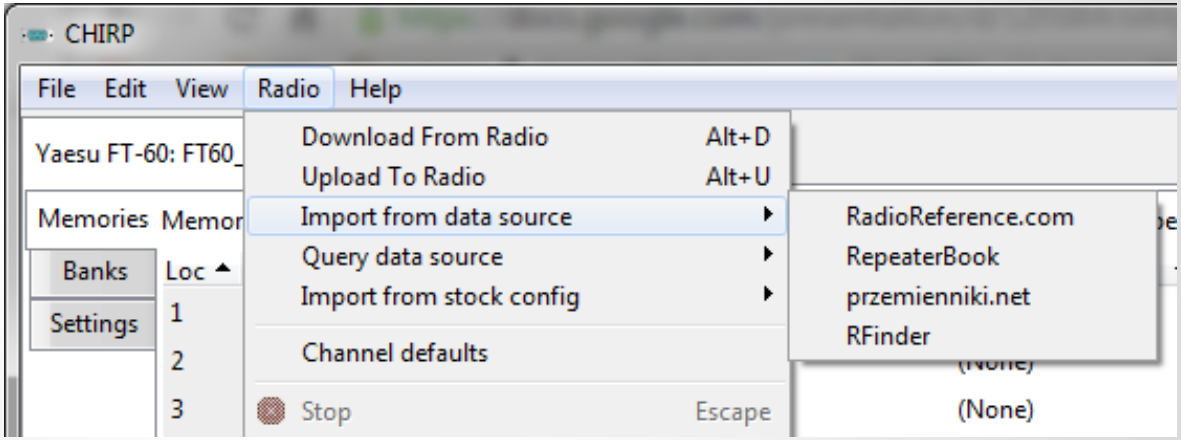


Stock Configurations

- ARES comm plan available from http://ncarc.net or make your own.
- Copy csv file to
  - C:\Program Files (x86)\CHIRP\stock_configs
- When you run it stock configs are copied to:
  - C:\Users\<*user*>\AppData\Roaming\CHIRP\stock_configs
- Can then be imported into any radio with a couple of clicks

Imports


CHIRP Files (*.chirp)
CHIRP Files (*.chirp)
CHIRP Radio Images (*.img)
CSV Files (*.csv)
DAT Files (*.dat)
EVE Files (VX5) (*.eve)
ICF Files (*.icf)
Kenwood HMK Files (*.hmk)
Kenwood ITM Files (*.itm)
Travel Plus Files (*.tpe)
VX5 Commander Files (*.vx5)
VX6 Commander Files (*.vx6)
VX7 Commander Files (*.vx7)

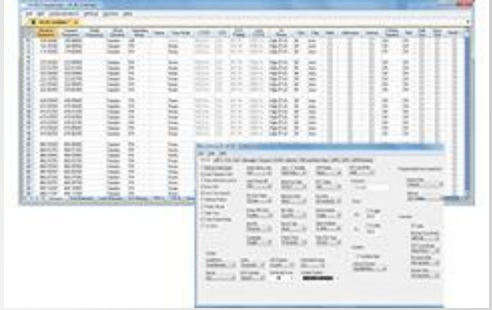

CHIRP
File
Edit
View
Radio
Help
Yaesu FT-60: FT60_
Memories
Memor
Banks
Settings
Loc
1
2
3
Download From Radio
Alt+D
Upload To Radio
Alt+U
Import from data source
Query data source
Import from stock config
Channel defaults
Stop
Escape
RadioReference.com
RepeaterBook
przemienniki.net
RFinder
(None)


rt SYSTEMS
RADIO PROGRAMMING MADE EASY

RTSystems

- Purchase from: *https://www.rtsystemsinc.com/*
- Supports lots of radios
- Free updates
- Typically $50 for the software and a cable for one radio type
- Great support
- Windows Only
- Local company that supports our Hamfests

RTSystems



Open several files at once.

- Files can be for the same or different radios (Version 4.50 Programmer for each radio required).

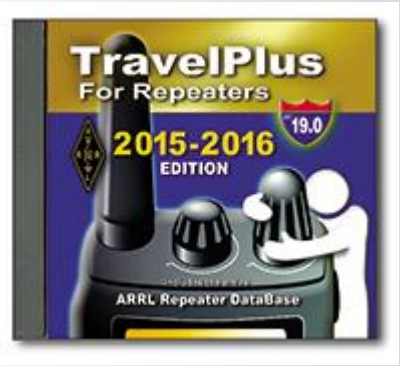
- Different color tabs at the top of the screen let you see that several files are open. Simply click a tab to switch between the files.

- Split the screen to see more than one file at once. Click here to see how easily this is done.

RTSystems

More ways to get the data you want to program in your radio. Quick... Easy... Create a file in 4 mouse clicks!

- ARRL Travel Plus.
- Radio Reference.
- Repeater Book.
- RFinder Worldwide Data Base.
- Options for using multiple settings files



Extra Slides

Radio Anomalies

- Yaesu 8800/8900 are different side-to-side
- Yaesu ‘banks’ are powerful, but tricky to configure.
- Almost every Baofeng is a different firmware version and the saved files are incompatible