

## **Newcomers and Elmers Net: Understanding HTs and Mobiles**

Robert AK3Q

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– This topic may sound almost too basic for discussion, but I have to tell you there are a lot of people, including experienced old-timers, who do not know how to use their handheld or mobile beyond turning it on to preprogrammed frequencies!

-- part of the reason for this is because we often get used to depending on programmed memory channels with everything set up

-- the problem comes in when we have to go to a simplex frequency, or when we have to put in a new repeater without our computer software!

-- but even things like entering PL tones can be easy to forget, and more and more radios are becoming smaller and smaller, meaning less room for buttons and knobs

-- even simple things like volume and squelch settings may be relegated to a menu, which makes changing things more complex or time consuming

The bottom line is that there is no substitute for using the main features of the radio regularly

-- enter simplex frequencies just to remember the process (which usually involves switching between memory mode and VFO mode

-- even the term VFO can be forgotten because we don't usually talk that way ("let's put our radios in variable frequency mode!" – doesn't quite sound right, does it?!)

-- also entering PL tones, offsets, and the like should become second nature to us, and all the more so if you are like me and have several brands of handhelds

-- some radios really make it hard to just enter a basic frequency

-- if need be, you could type out a small cheat sheet and tape it to the back of your HT

■ Regardless of the radio, know how to program it by hand or leave it at home. Force yourself to do it, even if only practicing, for any radio you will be taking out of the house. Your life could depend on it.

■ Know how to go simplex, how to turn off CTCSS/PL codes and offsets; how to switch between VFO and Memories, and how to transfer a memory to VFO – it could come in handy

■ Know how to save frequencies – it sounds basic, but some radios are designed, it would seem, to keep you from using the memory slots!

■ Don't get carried away with alphanumerics – it is too easy to forget the actual frequencies, and should your memories get zapped by you or by Murphy's Law, you need to be able to remember repeater

## frequencies, shifts, and PL Tones

Frequency Navigation – this is one of those again which at face value seems like it should be easy, but can be fairly complex depending on the radio

- for example, some radios use a knob to change frequencies or memory channels, depending on the mode the radio is in

- there are also radios like the TYT which change channels by up/down arrows

- even with knobs/arrows changing frequencies can be slow if you are making large changes

- most radios allow direct keypad entry, but again this is not a given, and some newer low-cost radios are eliminating the keypad

- while this seems obvious, you may find you cannot get the exact frequency; depending on the mode chosen the automatic spacing may be set differently—5 MHz, 2.5 MHz, etc.; this is usually referred to as the step size.

- most radios allow for manually setting the step size, but some will only let you get close

- the newest radios meet the standards for the smaller channel spacing even though amateur radio bands are not subject to them

- some radios allow you to select a one MHz jump with each click of the dial or arrow push

- you can also scan up and down

## PL/CTCSS/DCS

If you are getting into this repeater you already know how to put in a PL tone, usually indicated by a "T" in the display

- what you may not have tried is setting the mode to the full CTCSS mode which not only sends a tone to the repeater, but also listens for one before opening the squelch

- I have found this useful to avoid some of the interference that can come over a repeater signal

- this can affect a weak signal from a repeater, so keep that in mind

- this setting only works with a repeater which transmits a tone

- it can also be used radio to radio to only allow the squelch to open when the tone is sent

- this can be very useful to talk with someone else when there is a crowd on the bands and you don't want to hear everyone else

- an even better system for privacy is a DCS code – this is a version of coding which sends a specific code before each transmit and opens the squelch on a radio with the same code

- you could have 5 people with the code programmed in and then carry on conversations between each other without hearing everyone else

- BTW, if you ever want to check to see if there is a signal which is not breaking through the squelch, open the squelch manually (usually a button

on the radio); also good for checking for weak signals

-- Tone scanning is a feature which allows you to scan for a tone if you don't know what it is

-- if a transmitter sends a tone on transmit you can scan the output frequency; but if the repeater only uses an input tone, you will need to scan the input frequency (assuming you are close enough to hear the caller)

-- you can usually scan for either CTCSS or a DCS code

RF squelch preset – this setting allows you to set the radio so that only really strong signals get through

DTMF operation allows for programming/accessing repeater functions, using a phone patch, and other uses

-- this is like the tones on a phone

-- you can even use DTMF codes to do a quick test of how you are being received; punch in the proper code, transmit a message, and hear it played back to you

Transmitter Timeout feature alerts you to avoid timing out a repeater

-- may either be a tone or may drop transmission altogether

Lockout Options- lock out changes to keyboard, menu settings, or everything

## **Memories**

Memories are a topic to themselves almost, but in general most radios offer several options which are very useful

-- individual channels can be scanned one at a time

-- ranges of channels can be scanned such as a band, or a range of frequencies

-- memory banks are usually in units of 50 or 200 channels per bank; this allows you to organize frequencies into categories which fit your needs

-- local repeaters could be one, simplex frequencies could be another, and public service channels another

-- there may be other options as well

-- some radios offer a smart search feature which let you scan for repeaters in a new town, for example, and store them in memories.

-- there are also call or home channels which allow you to program in one or more frequencies per band for quick access to the most important repeater or simplex frequency in that band.

-- APRS/digipeater

-- Satellite Comms

-- RDF or Foxhunting

-- listening to police/fire services

- aircraft
- marine/coast guard
- airports - As you listen, you can actually hear the different air traffic communications of flights as they proceed through preparations to take off and land (clearance, ground, tower, departure, landing and so on). Each step has a different frequency, after a flight finishes checking in at one level, the pilots tune the radio to the next frequency.
- MARS Nets if you are near a repeater which has them
- nascar
- digital modes
- some handhelds cover FM broadcast radio too
- some HTs have frequency ranges from 108-999 or more - this means there are more public service transmissions to monitor, military aircraft, 220 band, 900 mhz band, FRS/GMRS, taxi, towing services,
- There are even a few radios which cover all the way down to the beginning of the AM band, right through the shortwave bands, and up to 1.3 GHz - that's a lot of coverage!!
- phone patches - check the weather, call 911; meet a buddy; just don't call your stockbroker!
- Echolink, IRLP, D-Star, DMR, WIRES-X (if capable)
- the key is learning how to use the memory channels in your radio so you can tailor them to what you want to listen to
- great for using alternative power sources like solar, gel cells, and various alternative batteries
- Instead of an iPod or an iPad, why not bring your handheld and a set of earbuds the next time you go to a coffee shop and tune in?!

Multiband radios give you the option of listening in to two bands at once (if it is a dual-receive radio) or listening to one frequency while periodically checking another (dual-watch radio)

- Some of the Chinese radios allow for listening in on FM radio while monitoring your favorite call frequency, and automatically switching over when there is activity there – it then automatically returns to the FM radio when the frequency goes quiet – a very cool feature!
- Another feature of a Chinese radio I have is the “Remote Stun” and “Remote Kill” feature, which allows me to remotely lock out transmit functions or transmit and receive functions
- BTW that same radio has a scrambler function which inverts the voice – this is not legal for hams to do, so if your radio has that feature, ignore it!! We are not allowed to send coded or “secret” signals!
- The same holds true for encrypted signals – typical amateur radio equipment does not have this, but some of the DMR/P25 commercial radios might have that feature and it must not be used

- And of course, any radio you use must be legal for amateur bands, so do your homework before buying or using any radio not made specifically for amateur radio only

### **Priority Watch**

Some radios have a priority watch function in addition to a call channel; the call channel is often used as your most important frequency or repeater – one button push gets you back to this repeater (this is your favorite repeater, right?!) )

- Priority watch allows you to be on one frequency while monitoring activity on the call channel, for example, or on some radios, a memory channel
- Some radios also allow for a memory scan while on the priority channel, with the priority channel being scanned every 4-5 seconds

### **Pager Function**

Many HTs and Mobiles have a pager function which allows individuals or a group of individuals to communicate between radios – this can be useful in a public service event or at a ham fest, for example, where people want to be able to communicate with their own group

### **Smart Search**

Some radios have a smart search function which scans above and below an active channel to find nearby active frequencies.

- Typically you can scan once, or you can allow the radio to scan continuously until the number of available slots are filled
- this is particularly handy if you are in a new city and do not know where the active repeaters are

### **Emergency Operation**

A number of radios also offer an emergency setting to either send out a beacon or to sound an audio or visual alarm or both.

- The feature usually works by storing the call sign or name of the radio operator and listens for a pair of CTCSS codes to activate the beacon
- An alternative to this is a one button press to an emergency channel which would be monitored by a second party for safety purposes

### **Password Protection**

If you have small children around or nosy friends who might think you just have a fancy walkie-talkie, you can password protect your radio or lock the keyboard

- Both options have their uses
- If someone is around who might mess with your radio, password protection is good just like you would use for a phone

- The keyboard lock is something I use regularly for walking around with an HT, or especially if it is in the car with me and capable of being jostled around
- This usually locks both the keyboard and the dials for changing memories or frequencies
- Some radios have multiple levels of lock-outs, allowing you to choose how much is locked out

Multi-band radios are available which include 6m and 10m, which gives you more bands to play on, as both 6 and 10 meters have repeaters which can be accessed by Techs and above.

- During different times of the year and even different times of the day you are likely to hear some distant signals come in
- There are also linked repeaters which can allow you to operate on 2m and be heard on 10 meters, for example
- I once heard a station in Jamaica coming in over 440 – really through me for a loop until I found out later it was on a linked repeater – I had never heard anything like that

Of course keep your eyes and ears open for advancements in the field; while expensive, there are radios coming out on the market with some incredible features, but which may or may not actually be useful

- You will have to make the call on what is useful, but when in doubt, ask around or find support forums and ask them if they use all the features of a decked-out radio
- You are likely to see a number of radios come out on the market capable of handling multiple digital modes, which might be a good way to go, or you may find digital modes are not really for you
- Likewise a radio capable of GPS/APRS/Camera capabilities and more is too pricey, or you decide it's just what the doctor order for you

If you just leave your radio on the same old frequencies all the time you won't be able to hear all that's out there!