

# Sevier Amateur Radio Club

Radio Tips for Operators - March 15, 2011

By: Steve Fehlhaber – KE7ZIW

Now that you have earned your license, it's time to fill in the blanks between studying for the test and actually having a usable radio in your hands. For us to Master the use of our Radios at the basic levels, we are going to need to understand the following terms and features of our radios:

- V or VFO
- M or Memory/Channel
- MW or Memory Write
- Home
- Scan
- Band
- Repeater Shift
- Offset
- Tone type
- Tone frequency
- DCS
- Analog/Name (A/N)

Today's Amateur Radios have the capability to talk across town, around the world and into outer-space. Because of their flexibility and capability, many of them might seem as though you are looking at the control panel of a modern aircraft or Space Shuttle. What the heck are all those buttons and why do I need them?

This document is going to restrict information to the VHF/UHF radio bands only. What is a radio band? Well, many years ago, we used a dial to "track" a needle across the face of a radio to find AM stations between 520 khz and 1610 khz "on our radio dial" or when the new fangled FM came about, we used this same dial to locate our favorite FM station between 88 and 108mhz. Later, when Television came about, we turned a selector knob that went click, click, between Channels 2 through 13. These "channels" were pre-programmed frequencies for audio and video in our Televisions so we wouldn't have to try and dial something in every time we wanted to use them.

Our Amateur 2 meter/VHF band is 144 to 148 mhz and our 70 centimeter/UHF band is 420 to 450 mhz, two bands, using defined limits of frequency to describe them. I am going to focus on the 2 meter/VHF band (144-148 mhz) because all of what I am about to discuss will pertain to any of the other bands.

Most of your new radios, whether they be HT's, mobile or base, will have many ways of using them to select a specific frequency, band or mode. This is where many folks start to become intimidated by all the knobs, dials and buttons. Let's see if we can fix some of that!

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If you can relate to the “dialing” and “clicking” of the old AM, FM and TV stations described above, then you are on your way to understanding the difference between VFO mode and Memory mode. In Amateur Radio terms, the method of dialing your radio to a specific frequency uses the VFO mode (note this refers to frequency, not channel). This means, that while your radio is in the VFO mode, you can spin a dial or knob and the frequency shown will increment or decrement accordingly. Almost always, before you can program a popular frequency into an easily usable “Memory Channel”, you need to pre-select that frequency on a VFO dial. Most radios are going to be easily marked to remind you of how to select between VFO and Memory use modes. Once you have dialed in a favorite frequency that you might use often or want easy access to, this frequency is “saved” into a Memory or Channel location. Just like the old TV’s had channels 2 -13 saved for us.

I want to remind you that up until now, we have been discussing a Receiving function only. We need to add the Transmission function to our discussions also.

Our Amateur radios, in the Simplex mode, are very similar to the old Walkie-Talkies or CB radios. Simplex merely means that we will Transmit (xmit) and Receive (rec) on the exact same frequency. Our Amateur radios however, have the ability to be used to xmit and rec on different frequencies simultaneously. This is called Duplex.

Duplex is used when we want to access Repeaters or the International Space Station or Satellites. This “Duplex” mode allows a Repeater to receive our transmitted signal and resend that same signal at the exact same time (the speed of light). Obviously, if it is to resend what we are transmitting on one frequency, it needs to resend it on a different frequency to be understood clearly. This is why our radios come pre-programmed with a feature called ARS in your manuals and handbooks. ARS is Automatic Repeater Shift. The VHF Band approved offset is 600 kHz for each repeater in operation and has been split up into shifting either up (+) or down (-) by the “offset” frequency. Certain parts of the band are not allocated for any “shift” at all, being designated as Simplex. Charts of these pre-configured offset directions are in most owner manuals.

Our new radios, with the ARS feature enabled, will automatically set the offset frequency of 600 kHz and the direction, +/-, as we “dial” the VFO across the band. When we are manually dialing the VFO to a repeater or local frequency that we eventually want to store as a Memory Channel, these offsets and shifts should be changing for us rather than needing to select them ourselves. There are easy ways to verify these settings.

The newer radios have “Setup” functions that will be Menu driven. Some of these will be user-friendly, as in alphabetical order for options, and some, unfortunately are not in any discernable order. Most importantly, these setup features are where your ARS, offset, Tone type, Tone frequency, display, contrast and many other radio features can be set or manipulated. **It will be extremely important for you to learn how to Enter and Exit your specific Radio “setup” mode.**

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Here is a sample set of “Steps” to use your new equipment:

1. Turn your radio on,
2. Set the Squelch level (optional, depends on how much noise you want to listen to),
3. Determine a frequency or Repeater that you would like to communicate with/on by locating it via the Internet, Repeater Maps, etcetera. (Note: most new radios allow you to program an upper and lower limit for scanning a band or portion thereof to “find” active frequencies. These radios are also capable of finding the tone type and tone frequency necessary for you to xmit and rec.)
4. Note any requirement for Tone, Tone Frequency, shift, etc.,
5. Make sure you place your radio in the VFO mode (vs Memory mode),
6. Dial or “punch in” the frequency,
7. Use the Setup function to set the Tone type, Tone Frequency and or verify the shift offset and direction,
8. In VFO mode, test the setup by pushing the PTT button momentarily and listening for the repeater to answer (if you’re entering a repeater frequency!). A simplex frequency can only be tested by engaging another operator and or radio on the same frequency),
9. If this is a frequency and configuration that you want to save in a Memory Channel, then use the save mode recommended by your manual. An example would be as follows:
  - a. Push the MW button momentarily, you should see a channel or memory flashing indicator,
  - b. You may need to select a channel at this time by rotating the appropriate knob or dial,
  - c. When the channel you want is selected, push the PTT or MW button again to save the setup and frequency into the selected channel.
10. This may leave your radio in Memory mode or return it to VFO mode, you need to learn how to identify what mode you are in and how to change it.

Once you have learned what your Radio is capable of, how to navigate between its functions and recognize where you are in those navigation modes, you will maximize your Radio enjoyment; I promise.

**Another tip: Many of the new radios have buttons with dual functions; push momentarily for one function, push and hold for another. As such, most are identified in some way with both functions. Try and familiarize yourself with your radio’s markings.**

As always, please feel free to contact me or anyone you feel comfortable with that can help guide or instruct you to this point.

73,  
Steve