Newcomers and Elmers Net: Cross-Band Repeat and Other Goodies

04-2-17 Robert AK3Q

Dual receive radios – radios capable of receiving on two bands

Sometimes called Dual watch radios – these radios can have one band set for transmit but can also listen on another band so if there is activity there you can switch to that band

Dual Band radios can also be designed so that you can have two separate receivers in them so that you can hear both at the same time but still only transmit on one band at a time, with the second band either muting when you transmit or continuing to receive

You can also have radios capable of listening and transmitting on the same bands or any combination – these are usually the more expensive of the various radios

The only radios capable of full cross-band repeat operation are radios with two independent receivers – not dual watch radios. These radios will typically have two independent sets of controls for each receiver

Cross-band repeating

Uses:

The uses for this can be many things - a hunter may have a HT on his person and a X-Band mobile in his vehicle on a hill so he can communicate to the outside world via HT.

A person may want to use a HT X-band repeated through home base antenna so as to walk around the neighborhood or take the dog for a walk etc.

Another use might be when off-roading to keep in touch with people somewhere on a main highway via mobile.

At a public service event, there might be times when part of a course or a staging area is out of sight for a local or base repeater and a car on top of a hill can act as a local repeater to get a signal out

If you are going to do public service work, find yourself in areas where using an HT Is not able to give repeater access, or other scenarios where you want to make sure you can be heard, learning how to use your cross-band repeat capabilities is important

- At the very least you should carry with you the instructions necessary to do it after you have practiced it at home, even if you do not have all the steps memorized.
- Best case scenario is that you do it enough that it is second nature to you, but still have the instructions available
- In an emergency, sometimes things do not come to mind quite as easily as we would like
- Chances are if you miss one step nothing will work, and that may get you even more confused

Each radio is different, so I am going to explain things in relatively generic terms, but they will apply conceptually to the process with any radio capable of cross-band repeat

- Two common methods of cross-banding involve full or one way cross banding
- Full cross-banding means the cross-band radio transmits your signal and the received signal
- One-way cross-banding means your cross-band radio transmits your signal but your receive radio handles the reception
- For example: you have a hand-held radio capable of receiving a local repeater, but is not powerful enough when out walking the dog to reach the repeater
- You can transmit simplex back to your base/car station to your cross-banding radio, it re-transmits on the repeater input frequency (just as if you were using it to talk on the repeater, with all appropriate tone and offsets), and the repeater receives the signal and operates normally
- In this scenario, you are using your dual band handheld to transmit simplex on 440 and receive the repeater on 2 meters.
- Full-cross-band repeat mode means you transmit simplex with your hand-held to your cross-band repeater radio, it retransmits on the repeater input frequency with all the appropriate tone and offset settings, and then transmits what is received on the two-meter side from the repeater cross-banded to a simplex 440 band frequency and back to your HT, which is set at the 440-simplex frequency

Legalities

In one way cross-band repeat IDing is taken care of in the usually fashion – the repeater has its id, you state your id, and all is good.

In full cross-band repeater operation technically your cross-band repeater radio is supposed to id every 10 minutes just like a regular repeater, because it is a transmitting unit

- Most modern radios have this function built in, often as a CW id, but it may be an option which needs to be turned on in the radio's memory
- It is always the control operator's responsibility to make sure the radio is operating correctly

Even if you do not have a full-blown cross-band repeat function in your radio, dual receive and dual watch radios can be very useful features

- Obviously being able to transmit either on 2m or 440 is useful – more repeaters, more reach
- Dual watch radios can allow you to monitor two repeaters at a time, or possibly scan a set of repeaters on one side and keep a priority repeater on the other – so maybe you want to always keep an ear on this 67 repeater, but also scan Northern KY repeaters, Milford's, Skywarn, and some Indiana repeaters also.
- When activity happens on the 67 priority channel the radio will switch to it automatically, and then resume scanning either after activity is concluded on the priority repeater, or after a set time limit, depending on the radio's features
- Some radios like the Baofengs and others can stay on your favorite FM Broadcast radio station but monitor your favorite repeater, switching back as necessary.

Remote Control

Some radios offer remote control capability, meaning you can enter commands, switch bands/frequencies remotely

This can be used in conjunction with cross-band repeat capabilities if the radio is so designed

- The basic idea is to first put the radio in remote control mode and ensure the HT is able to communicate with the mobile rig while in remote control mode – this is usually accomplished by having a password which can be set in the mobile radio and transmitted through DTMF codes on the handheld

- The mobile radio is then controlled by the HT, and able to have codes sent which can change memory channels, bands, etc.
- After the mobile is set up as needed, then cross-band mode is enabled remotely, after which remote control is disabled, putting the mobile radio into its usual cross-band repeat mode
- Operations are carried out as normal, and the when done, remote mode is re-enabled, cross band mode is disabled
- The usefulness of this ability comes into play when there is a need change bands or frequencies on the mobile radio but the operator is away from the mobile
- Normally you would have to go back to the mobile site, manually change bands and then go back to your operating post
- With remote capability, you can operate cross-band, suspend cross-band mode, change bands, settings as needed through the DTMF codes from the keypad of your HT, and then re-enable cross-band repeat

Some other modes of operation which can be used in a similar fashion to Cross-band repeat:

- Sky Command II by Kenwood
- System Fusion/Wires-X by Yaesu
- Echolink Mode
- IRLP mode

Additional uses for Dual Watch or Dual Receive Radios:

Wide band receive allows for hearing non-ham transmissions, such as aircraft, public safety, marine, railroad, etc. depending on the range of reception capabilities of the radio

Various scanning of memories or blocks of frequencies can be scanned while also monitoring a desired frequency if the radio allows