

Effective Method of Crossbanding without breaking TOO many rules

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Before going into the details, it is necessary to explain a little bit about the WHYS of this configuration.

Essentially, Part 97 requires that all transmissions have to be identified by the source. For example, when you key up your radio, you have to identify. Repeaters are also required to identify. That being said, when you go into crossbanding mode, the radio you are using to crossband also has to be able to identify itself.

Easy right? Not exactly....

THE MOST STANDARD CONFIGURATION

If you use a radio that has 2-way crossbanding, your transmissions into the other side (i.e. UHF to the VHF repeater) is easy. All you have say is "This is K9XXX on the K9XXX remote". There are many variations to what you can say, but as long as you identify both yourself and the crossbanding radio, you seem to be complying to Part 97.

The hard part is the other way around. And for this, I am going to use my first example:

VHF: 146.910 - offset 127.3 PL
UHF: 446.425 no offset (or simplex)

In this example, 146.910 Mhz is a local repeater, and the UHF side is set for a simplex frequency. With crossbanding turned on, anything that is heard on 446.425 Mhz is going to 'key up' the VHF side, transmitting on 146.310 Mhz. So far, so good.....

The problem lies with what happens on the other side. In this configuration, all traffic coming from the 146.910 repeater is also being retransmitted into the UHF simplex frequency.

Not only are you using up your battery power, Part 97 is now being violated. Why? Because the repeater does not know about your crossbanding radio, and therefore is unable to identify it as a remote.

Another factor in this is that although 446.425 Mhz is probably not used very much where you live, it's possible. And they probably don't know that you have your crossbanding radio on. The result is that any outside transmissions on the UHF side is also going to be sent to the VHF repeater as well. Operators thinking that they are on a simplex frequency are also unknowingly on a repeater.

THE SIMPLEX CONFIGURATION

For my second example, we are going to just use the repeater's input frequency:

VHF: 146.310 no offset 127.3 PL
UHF: 446.425 no offset 127.3 PL

Perfect, right? No more repeater output back into the UHF side, and by adding the PL (ENCODE and DECODE) to UHF, we solve the problem of anyone else's transmission hitting the repeater.

The problem? This particular repeater is busy all the time, especially during the morning and evening drive times. And from where I am located, several people on the repeater are also in SIMPLEX range. Again, fellow operators are transmitting that have no idea that I have my crossbanding radio on. Since they aren't identifying my remote, Part 97 rules are being violated.

THE FINAL SOLUTION

For those radios that have 2-way crossbanding, I have found this to be the most secure configuration. There are still a chance of unexpected transmissions, but to be honest it hasn't happened yet.

VHF: 145.710 + offset 127.3 PL
UHF: 446.425 no offset 127.3 PL

In this configuration, I have chosen to go 1.2 Mhz below the repeater's output frequency. Therefore we no longer hear the output or input of the repeater. When the UHF side hears a transmission, it 'keys up' the VHF side by going UP .6 Mhz - 146.310 - the repeater's input frequency.

It is also important to have ENCODE and DECODE on both sides to minimize outside interference or other operators that might use the same frequency.

THINGS TO REMEMBER

1. If you're not listening to the repeater, turn the crossband radio off. Any interference due to your radio is your fault, so it's important to monitor while crossbanding is turned on.
2. If you have a dual-channel HT, set the other channel to the UHF frequency. Although probably extremely rare, it is important to make sure no interference is going on the other side, too. (See Item 1.)
3. If 1.2 Mhz down (or up) seems to interfere with something else (packet, APRS, etc.), you will probably have to use the radio's Split-Frequency Memory, if the radio has the capability. (I never said this was a perfect solution.)
4. If you have fellow hams that would like to use your crossbanding radio, that's fine. Just remember that they also need to identify the crossbanding radio as YOUR remote.

ONE LAST THING

I admit this to everyone - I did not design this configuration. To be honest, when I purchased my first crossband radio, I was using the first two configurations, and getting very frustrated that it wasn't working as well as I wanted it to. So I talked to a few friends that I knew crossbanded a lot, and a good friend helped me out by explaining the same thing I just explained to you now. There have also been several discussions with local OO's as to the best way to handle crossbanding methods, and this one has been viewed by them as the best method, creating the least possible chance of interference.