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 why I decided to write this.

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 with your callsign. Repeater 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? Well, not exactly....

1. THE MOST STANDARD CONFIGURATION

If you use a radio that has 2-way crossbanding, identifiying your transmissions from UHF to the VHF repeater is easy. All you have say is "This is K9XYZ on the K9XYZ 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 with Part 97.

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

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

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In this example, 146.910 Mhz is a local repeater, and the UHF side is set for a UHF 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. With 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 rules are now being broken. Why? Because the repeater does not know about your crossbanding radio, and is unable to identify it as a remote.

Also, even though 446.425 Mhz is probably not used very much where you live, it's possible. And those that use it 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.

2. THE SIMPLEX CONFIGURATION

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

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

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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 issue here is 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. If they are close enough, and transmitting, not only are they using the repeater, but also going back into the UHF side of your radio.

3. 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.

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

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In this configuration, I have chosen to go 1.2 Mhz below the repeater's output frequency.

This works best because we no longer hear the output nor input of the repeater. When the UHF side hears a transmission, it 'keys up' the VHF side by going UP 600 Khz (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. This configuration is based on you listening on your HT to the VHF repeater, and transmitting on the UHF simplex frequency. Many HT's nowadays will allow you the ability to save this type of setting into a memory channel.

3. 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.

4. 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 feature, if the radio has the capability. (I never said this was a perfect solution).

5. 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 flustrated 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.