SIMPLEX CROSS-BAND REPEAT OPERATION

Operational Scenario:

A dual-band mobile rig capable of being configured as a simplex cross-band repeater (CBR) can be a useful tool during CCAR activation or public service events where net operations are being conducted on a 2 meter simplex frequency. The CBR effectively translates back and forth between a 2m simplex channel and a 70cm simplex channel. Thus, a low-power 70cm HT can work through a mobile CBR station to communicate with a 2m simplex net, taking full advantage of the mobile rig's hi-power capabilities. Any dual-band or dedicated 70cm HT can be used to operate through a CBR.

Some situations where CBR operation may be useful:

1. A net operator needs to be on foot away from the mobile rig. With the mobile rig configured as a CBR, the operator can communicate with the 2m simplex net using a low-power 70cm HT.

2. A parked mobile station configured as a CBR and located on high ground can be used to provide a 70cm simplex link into low-lying areas with poor simplex coverage.

3. Using a low-power 70cm HT, an operator located deep within a building can operate through a mobile CBR in the parking lot to communicate with the 2m simplex net.

Mobile Rig Configuration:

There is no common setup for all manufacturers. Consult your owners manual for instructions for your specific radio. The following procedure is based on the Yaesu FT-8100:

1. Power on to set up.

2. VFO or MR mode

3. Set the VHF frequency to the net 2-meter simplex frequency. Set the PL tone to 103.5, if being used by the CCAR net.

4. Set the UHF frequency to 446.15 MHz. Set the PL tone to 103.5, if being used by the CCAR net.

5. Main or Sub-band designation is not required. The radio will automatically respond to the strongest signal on either band.

6. Set the power to the lowest setting required for reliable communications with the 2m net.

7. Power off the radio.

8. While pressing the RPT button, power on the radio.

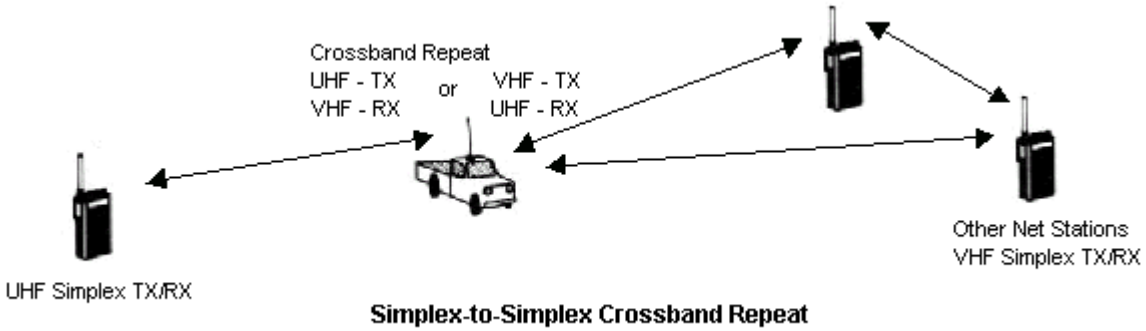
9. Release the RPT button when the radio is operational. A small icon may appear to the left of the frequency display to indicate that the CBR function is active.

HT Configuration:

1. Set the HT for 446.15 MHz simplex.

2. Set the PL tone to 103.5 if being used by CCAR for the net.

Caution: When more than one CBR is being used within a net, interference may be encountered. Make sure each CBR is configured to use a different 70cm simplex frequency. Coordinate your choice of frequencies with the Net Control Station to avoid interference to the net.



Simplex-to-Simplex Crossband Repeat

RANGE EXTENDER OPERATION

Operational Scenario:

Also known as *One-Way Cross Band Repeat*, the range extender mode can be used when an HT has insufficient transmit power to bring up the CCAR repeater during an activation or public service event. In this mode, the mobile rig is configured as a one-way simplex repeater, receiving a 70cm simplex signal and retransmitting it out on the CCAR 2-meter repeater's input frequency. The HT monitors the CCAR 2-meter repeater output frequency directly. Thus, to set up in this configuration, an HT capable of operating on both 2-meters and 70cm simultaneously is required.

Mobile Rig Configuration:

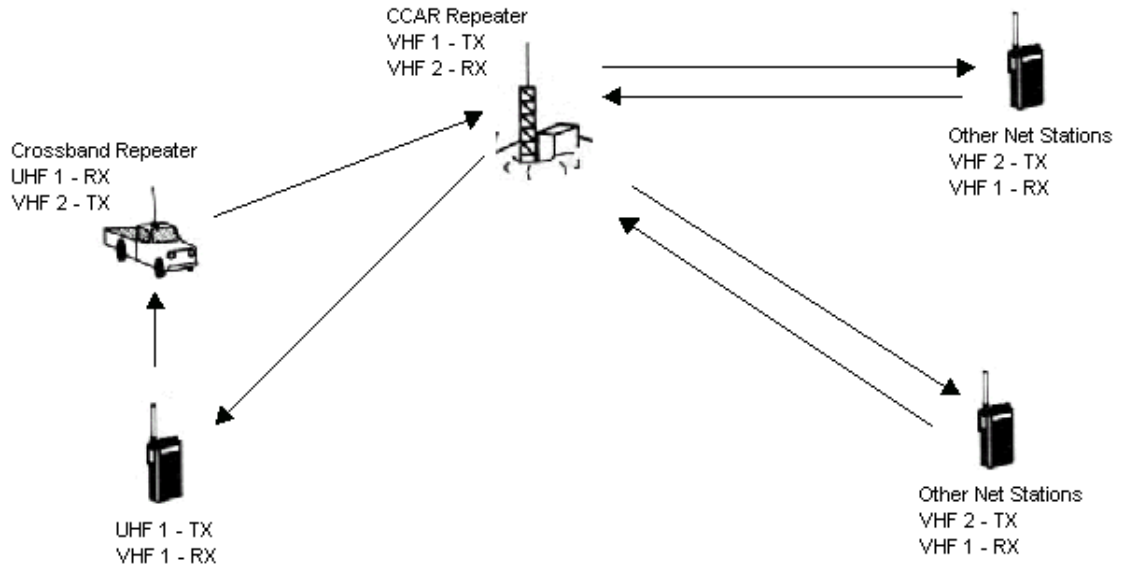
There is no common setup for all manufacturers. Consult your owner's manual for instructions for your specific radio. The following procedure is based on the Yaesu FT-8100. The procedure is similar to that of the *Simplex-to-Simplex* CBR mode with the following modifications:

1. The CCAR repeater's input frequency, 146.340 MHz, should be set up as the Main Band.
2. 446.15 MHz should be set up as the Sub-band.
3. To bring up the radio in the one-way repeater mode, press and hold RPT and CNTRL simultaneously while powering up the radio.

HT Configuration:

1. Set 446.15 MHz as the main band.
2. Set 146.940 MHz as the Sub-band. Note: This is the CCAR repeater's output frequency. You will be monitoring the CCAR repeater's output directly.

Caution: When more than one CBR is being used within a net, interference may be encountered. Make sure each CBR is configured to use a different 70cm simplex frequency. Coordinate your choice of frequencies with the Net Control Station to avoid interference to the net



Range Extender Crossband Repeat

LEGAL CONSIDERATIONS

Before setting up a cross-band repeater capability, **make sure you are familiar with the FCC regulations** which govern repeaters and "remote bases." To make these operations fully compliant with FCC regulations, there are a few points which need to be considered. Two of the major requirements are discussed below..

Station Control

The FCC requires that a repeater be under the control of an operator who controls the repeater and can intervene in the event of a problem. Control can either be local (i.e., "the use of a control operator who directly manipulates the operating adjustments in the station to achieve compliance with the FCC rules") or remote ("the use of a control operator who indirectly manipulates the operating adjustments in the station through a control link to achieve compliance with the FCC Rules"). In the scenarios described above, the user is likely to be within fairly close proximity to the CBR and able to directly monitor and control it. In this case, the CBR could be considered locally-controlled, satisfying the station control requirements.

Station Identification

An unattended station needs to be identified on all frequencies on which it transmits. When the user identifies on the UHF uplink, the CBR is also identifying itself on the VHF side. However, many radios do not have the capability in CBR mode to identify on the UHF downlink (transmit) side (or the VHF side, for that matter). Additionally, when another operator transmits on the UHF uplink, the CBR won't be correctly identified on the VHF side, either. So, depending on your radio, some sort of add-on device for automatic identification may be required for full FCC compliance.

Credits for this page go to Craig, WB3GCK