Repeater fundamentals

If you’re new to ham radio, you might have already discovered how to talk with a friend or check into a net through a repeater. Still, some find that repeater communication is a little challenging, whether they’re new or experienced. Let’s walk through some basics on how to send your signal through a repeater.

The necessary settings on your radio include frequency, offset, shift direction, and tone. Even after making sure these are set correctly, you still might run into a few problems, so let’s talk about those too.

1. Frequency
To set your frequency, make sure your radio is in “Frequency Mode” or “VFO” then punch in the six-digit frequency. For the 146.780 MHz repeater, for example, press 1-4-6-7-8-0 and you’re set.

2. Offset
For 2 meters, the offset is 0.6 MHz (same as 600 kHz), so your offset should read 000.600. For 70 cm, the offset is 5.0 MHz. If your radio is capable of ARS (automatic repeater shift), simply enable that feature.

3. Shift direction
In Utah (and much of the US), the shift direction ("SFT-D") is negative if your frequency is 147.000 MHz or less, and positive if it is greater than 147.000 MHz. The ARS feature will also take care of this setting.

4. Tone
The tone (formerly “PL tone”) is a kind of password required by the repeater to enable the re-transmit function. Most Utah repeaters require a tone, and many require 100.0 Hz.

5. Trouble-shooting
If your necessary settings are all correct, you might still run into a few problems, including:

a) Antenna
If you’re on the repeater can’t hear you well, you just might need to get a better antenna, such as a Signal Stick or a J-pole or a mag-mount antenna.

b) Location
If you’re transmitting from within your house, your vehicle, or behind a hill, your signal might become compromised. If moving a few inches doesn’t help, try stepping outside.

c) Bandwidth
In Utah, the repeater bandwidth must always be set to Wide (±5 kHz deviation). If you set your radio to Narrow, you might sound loud through the repeater, but a bit distorted.

d) Microphone
If you’re using the built-in microphone on your HT (handheld transceiver), you need to speak very close to it. If you’re using a hand microphone, you need to keep your mouth a few inches away from it. With any microphone, don’t speak into the microphone, but across its face, to prevent puffing into it.

Also, if you begin speaking right after you press the PTT (press-to-talk) button, the first word you say might get cut off of your conversation, so wait a second before you begin speaking.

e) Proximity
If you’re trying to communicate with a ham who’s less than fifty feet from you (within the same house or with a vehicle in the next lane), you could experience desense (desensitization), in which one radio is being overwhelmed by the nearby-frequency signal (offset) of the other radio, which won’t likely happen if you’re both on simplex.