

Strays – 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.

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.

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.



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.

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**.

Troubleshooting

If your necessary settings are all correct, you might



still run into a few problems, including:

- **Antenna**

If people 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.

- **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**.

- **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.

- **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 an inch away from it. With any microphone, don't speak directly 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.

- **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.