

## **A Simple description of Repeater Operations and Simplex Operation on VHF/ 2 meters (144 Mhz)**

Operating through a repeater, where you transmit (talk) on one frequency and receive (listen) on another, is called *duplex operation*.

Operating direct to another station, where you transmit and receive on the same frequency, is called *simplex operation*, you do not use a repeater.

A repeater is a station that receives a signal on one frequency (the input frequency) and then retransmits that signal on a different frequency (the output frequency).

Repeater antennas are typically located at the tops of tall buildings, and antenna towers, so a relatively low-power signal can reach the repeater. Most repeaters, like K6IS, have multiple receive locations to enhance the ability to receive lower powered signals within it's coverage area.

The repeater retransmits the signal at a higher power. This gives your transceiver or HT (Handie Talkie) the ability to communicate over a much greater range than using simplex operation.

To use a repeater, you must know the repeater's input and output frequencies. Repeaters are usually identified by their output frequency.

For example K6IS is a repeater that has an output frequency of 145.190 and is referred to as "the 145.190 repeater" or "the K6IS repeater".

To determine the input frequency, you must know the frequency offset (typically 600 KHz for the 2-meter band) and the offset direction (+ if you add 600 KHz to the output, or – if you subtract 600 KHz from the output). In the case of K6IS this would be – (minus) 600Hz or 145.590 Mhz.

Whether the offset is positive or negative depends on:

- which part of the band the repeater operates on
- local convention (coordination and band plan)
- proximity of repeaters using the same two frequencies

Most repeaters use a CTCSS tone. This is typically referred to as "PL". This is used in higher density areas where more than one repeater may be on the same frequency. For K6IS this is; 162.2 Hz for the "East" repeater and 123.0 Hz for the "West" repeater.

The ARRL Repeater Handbook (available at your local radio store or directly from the ARRL) lists the locations of repeaters as well as their operating frequency, offset and PL information.

On the web go to: <http://www.narcc.org> for all northern California repeater information and listings.

-this information was paraphrased from the Radio Shack HTX252 Manual