

## Section 11

### Repeaters

**With the material provided demonstrate the correct use of voice repeaters with and without A) CTCSS B) DTMF**

1. **Task.** By the use of an Amateur Radio station preferably on-air, the candidate demonstrates the use of voice repeaters with and without CTCSS or DTMF tones. For example, repeater access with and without IRLP. The candidate must demonstrate the need to identify the station before transmitting DTMF tones and may incorporate other elements of competency such as Protocols prior to transmission etc. This task should be repeated at least three times. Candidate demonstrates a rudimentary knowledge of the use of CTCSS and DTMF tones, voice repeater access and placing a call on air.
2. **Task.** May be done as part of other elements of competency involving on-air operation. Candidate demonstrates the usage of breaks in transmission Candidate demonstrates (preferably on-air) the need for breaks in radio transmissions.

**CTCSS** – Continuous Tone Coded Squelch System (Privacy tone). If the repeater requires a CTCSS tone, it will only respond to the signals with that tone. CTCSS is only required on the radio transmit signal and the repeater does not send out the CTCSS tone.

**DTMF** –Dual tone multi-frequency (DTMF) are the tones generated when the numbers are pressed, and these tones are transmitted with the voice channel. DTMF is used to control automated equipment and signal user intent, such as the number they wish to dial.

**IRLP** - The Internet Radio Linking Project (IRLP) uses Voice-Over-IP (VoIP) custom software and hardware linking repeater site or simplex station to the world through a worldwide network of dedicated servers and nodes.

**Offset** – The difference between the transmit and receive frequency.

#### Breaks

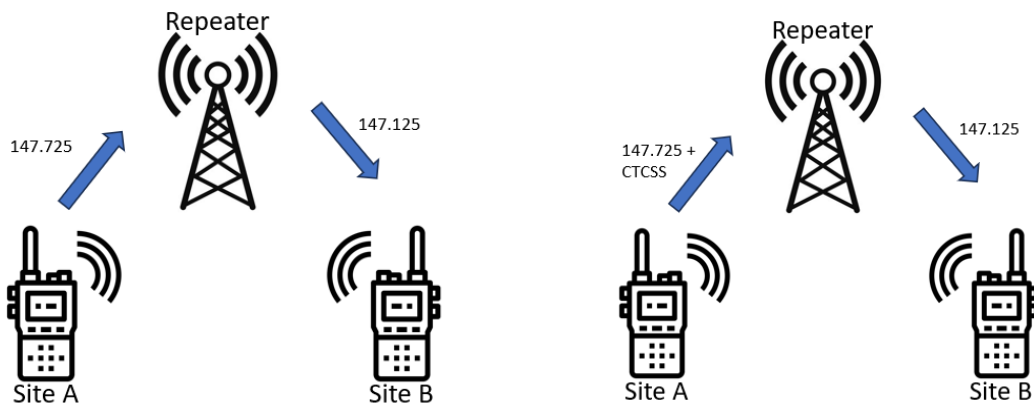
- Don't overload repeaters. They are fitted with time out to prevent continuous use.
- Courtesy - Lets others access the frequency if needed. You may be working a remote station that others may want to access e.g. satellite.
- Listen for others. Some weaker signals of importance may be blocked by your occupation on frequency.

#### FYI

**Safety.** - In marine radio, the frequencies are silent during the period 3 minutes after the hour and three minutes after the half hour to allow any messages to be read

**600kHz offset**

**600kHz offset and CTCSS**



### Set up radio for a repeater.

1. Consult the [Australian Repeater Directory](#) to identify the correct parameters for that repeater.
2. Enter the details into the radio.
  - Receive frequency.
  - Offset
  - CTCSS on transmit.
3. Listen to see if the frequency is in use before transmitting.
4. Make a call through the repeater.

### Action:

1. Revise [Chapter 11-2 in the Foundation](#).
2. Know how to set up a repeater contact with a radio.
3. Understand CTCSS and DTMF
4. Understand why you have breaks on repeaters.

*Have fun and stay safe.*