Technician Licensing Class

Repeateres

Presented by
ELEMENT 2 SUB-ELEMENTS

(Groupings)

- About Ham Radio
- Call Signs
- Control
- Mind the Rules
- Tech Frequencies
- Your First Radio
- Going On The Air!

- Repeaters
- Emergency!
- Weak Signal Propagation
Amateur Radio Technician Class
Element 2 Course Presentation

ELEMENT 2 SUB-ELEMENTS (Groupings)

- Talk to Outer Space!
- Your Computer Goes Ham Digital!
- Multi-Mode Radio Excitement
- Run Some Interference Protection
- Electrons - Go With the Flow!
- It’s the Law, per Mr. Ohm!
- Go Picture These!
- Antennas
- Feed Me with Some Good Coax!
- Safety First!
Repeaters

Before you press the PTT switch, LISTEN to make sure the frequency is clear for use.

And when you get your license, listen for a week on a repeater to get the feel for how to communicate.
Repeaters

- **T1F9** A Repeater station is the type of amateur station that simultaneously retransmits the signal of another amateur station on a different channel or channels.

- **T1D7** Amateur station are authorized to automatically retransmit the radio signals of other amateur stations when the signals are from an auxiliary, repeater, or space station.

A repeater: Nice clean, neat, and compact.
Repeaters

- **T4B11** The difference between the repeater's transmit and receive frequencies describes the common meaning of the term “repeater offset”.

- **T2A1** The most common repeater frequency offset in the 2 meter band is plus or minus 600 kHz.

- **T2A3** Plus or minus 5 MHz is a common repeater frequency offset in the 70 cm band.

- **T2B4** Common problems that cause you to be able to hear but not access a repeater even when transmitting with the proper offset:
  - The repeater receiver requires audio burst for access
  - The repeater receiver requires a CTCSS tone for access
    - CTCSS – Continuous Tone Control Squelch System
  - The repeater receiver may require a DCS tone sequence for access
    - DCS – Digital Code Squelch

All of these choices are correct.
Repeaters

What repeaters really look like.

McKinney, Tx 442.575 UHF Repeater \( \text{N5GI} \)

Dallas, Tx 442.025 UHF Repeater \( \text{K5TIT} \)

McKinney, Tx 145.350 VHF Repeater \( \text{N5GI} \)
Repeater

Offset + 600 kHz

Input Freq 147.960 MHz

Output Freq 147.360 MHz

PL 131.9

Miami, FL

N4OCA

60 miles

2-meter band
Input Freq
146.280 MHz

Offset
- 600 kHz

PL 107.2
Chicago, IL
K9GFY

Output Freq
146.880 MHz

2-meter band

60 miles
Receivers

Input Freq 447.275 MHz

Offset + 5.0 MHz

PL 100.0
Dallas, TX
N5ZW

50 miles

Output Freq 442.275 MHz

70-centimeter band
Repeaters

- T2B2  CTCSS is the term used to describe the use of a sub-audible tone transmitted with normal voice audio to open the squelch of a receiver. (CTCSS – Continuous Tone-Coded Squelch System)
  
  - Also called a PL tone
  
  **CTCSS Tones In Use**
  
  67.0 Hz  94.8 Hz  131.8 Hz  171.3 Hz  203.5 Hz
  69.3 Hz  97.1 Hz  136.5 Hz  173.8 Hz  206.5 Hz
  71.9 Hz  100.0 Hz  141.3 Hz  177.3 Hz  210.7 Hz
  74.4 Hz  103.5 Hz  146.2 Hz  179.9 Hz  218.1 Hz
  77.0 Hz  107.2 Hz  151.4 Hz  183.5 Hz  225.7 Hz
  79.7 Hz  110.9 Hz  156.7 Hz  186.2 Hz  229.1 Hz
  82.5 Hz  114.8 Hz  159.8 Hz  189.9 Hz  233.6 Hz
  85.4 Hz  118.8 Hz  162.2 Hz  192.8 Hz  241.8 Hz
  88.5 Hz  123.0 Hz  165.5 Hz  196.6 Hz  250.3 Hz
  91.5 Hz  127.3 Hz  167.9 Hz  199.5 Hz  254.1 Hz

- T2A9  A brief statement of saying your call sign is often used in place of "CQ" to indicate that you are listening on a repeater.
Repeaters

- **T1A8** A Frequency coordinator recommends transmit/receive channels and other parameters for auxiliary and repeater stations.

- **T1A9** Amateur operators in a local or regional area that are eligible to be auxiliary or repeater stations select a frequency coordinator.

- **T1A11** An auxiliary station transmits signals over the air from a remote receive site to a repeater for retransmission.

- **T1F5** Call sign identification is required for a station transmitting phone signals by sending the call sign using CW or phone emission.

Repeaters can identify with a voice message announcing their call sign, or use Morse code to send out their station call letters.
Element 2 Technician Class
Question Pool

Repeaters
Valid July 1, 2010
Through
June 30, 2014
What type of amateur station simultaneously retransmits the signal of another amateur station on a different channel or channels?

A. Beacon station
B. Earth station
C. Repeater station
D. Message forwarding station
When is an amateur station authorized to automatically retransmit the radio signals of other amateur stations?

A. When the signals are from an auxiliary, beacon, or Earth station
B. When the signals are from an auxiliary, repeater, or space station
C. When the signals are from a beacon, repeater, or space station
D. When the signals are from an Earth, repeater, or space station
Which of the following describes the common meaning of the term “repeater offset”?

A. The distance between the repeater’s transmit and receive antennas
B. The time delay before the repeater timer resets
C. The difference between the repeater’s transmit and receive frequencies
D. The maximum frequency deviation permitted on the repeater’s input signal
What is the most common repeater frequency offset in the 2 meter band?

A. Plus 500 kHz
B. Plus or minus 600 kHz
C. Minus 500 kHz
D. Only plus 600 kHz
T2A03 What is a common repeater frequency offset in the 70 cm band?

A. Plus or minus 5 MHz
B. Plus or minus 600 kHz
C. Minus 600 kHz
D. Plus 600 kHz
Which of the following common problems might cause you to be able to hear but not access a repeater even when transmitting with the proper offset?

A. The repeater receiver requires audio tone burst for access
B. The repeater receiver requires a CTCSS tone for access
C. The repeater receiver may require a DCS tone sequence for access
D. All of these choices are correct
What is the term used to describe the use of a sub-audible tone transmitted with normal audio to open the squelch of a receiver?

A. Carrier squelch
B. Tone burst
C. DTMF
D. CTCSS
What brief statement is often used in place of "CQ" to indicate that you are listening on a repeater?

A. Say "Hello test" followed by your call sign
B. Say your call sign
C. Say the repeater call sign followed by your call sign
D. Say the letters "QSY" followed by your call sign
Which of the following entities recommends transmit/receive channels and other parameters for auxiliary and repeater stations?

A. Frequency Spectrum Manager
B. Frequency Coordinator
C. FCC Regional Field Office
D. International Telecommunications Union
Who selects a frequency coordinator?

A. The FCC Office of Spectrum Management and Coordination Policy
B. The local chapter of the Office of National Council of Independent Frequency Coordinators
C. Amateur operators in a local or regional area whose stations are eligible to be auxiliary or repeater stations
D. Regional field Office
Which of the following stations transmits signals over the air from a remote receive site to a repeater for retransmission?

A. Beacon station
B. Relay station
C. Auxiliary station
D. Message forwarding station
What method of call sign identification is required for a station transmitting phone signals?

A. Send the call sign followed by the indicator RPT
B. Send the call sign using CW or phone emission
C. Send the call sign followed by the indicator R
D. Send the call sign using only phone emission