Technician Licensing Class

Run Some Interference Protection

Presented by
Amateur Radio Technician Class
Element 2 Course Presentation

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
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- **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!
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- **T7B10** If you receive a report that your audio signal through the repeater is distorted or unintelligible:
  - Your transmitter may be slightly off frequency,
  - Your batteries may be running low,
  - You could be in a bad location. All of these choices are correct.

- **T4B1** If a transmitter is operated with the microphone gain set too high the output signal might become distorted.

- **T7B1** If you are told your FM handheld or mobile transceiver is over deviating, talk farther away from the microphone.

- **T2B7** If you receive a report that your station’s transmissions are causing splatter or interference on nearby frequencies check your transmitter for off-frequency operation or spurious emissions.
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- **T4B5** Turning on the noise blanker would reduce ignition interference to a receiver.
  - Not on common FM handheld or mobile FM radios
  - On bigger high-frequency, multi-mode transceiver

Even this older Icom 730 has the NB function

PreAmp built in

NB - Noise Blanker
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- **T7B9** If another operator reports a variable high-pitched whine on the audio from your mobile transmitter, noise on the vehicle’s electrical system is being transmitted along with your speech audio.
  - Automobile alternator without filters on leads
- **T4A10** The alternator is the source of a high-pitched whine that varies with engine speed in a mobile transceiver’s receive audio.
- **T4A9** You would use a ferrite choke to reduce RF energy flowing on the shield of an audio cable.

![Image of Clam shell iron devices](image-url)
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- T4A5 A band-reject filter should be connected to a TV receiver as the first step in trying to prevent RF overload from a nearby 2 meter transmitter.

**Diagram:**
- Low Pass Filter on Transmitter
- High Pass Filter on TV
- Low Pass Filter

**Explanation:**
- Low Pass Filter passes low frequencies and cuts high frequencies.
- High Pass Filter on TV.
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- **T4A4** Install a filter between the transmitter and antenna to reduce harmonic emissions.

There are low-pass filters like this one, band-pass filters, and high-pass filters that can be used to solve interference problems.

Drake TV-3300-LP Low Pass Filter. 80 db attenuation above 41 MHz. 1000 Watts below 30 MHz.
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- **T7B3** Causes of radio frequency interference:
  - Fundamental overload;
  - Harmonics;
  - Spurious emissions.  
    All of these choices are correct.

- **T7B11** Reports of garbled, distorted, or unintelligible transmissions can be caused by RF feedback in a transmitter or transceiver.
  - Most likely cause is RF feedback between your antenna and mic.

- **T7B6** If someone tells you that your station’s transmissions are interfering with their radio or TV reception make sure that your station is operating properly and that it does not cause interference to your own television.
  - Double check that your TV is working okay when transmitting.
The most likely cause of interference to a non-cordless telephone from a nearby transmitter is that the telephone inadvertently acts as a radio receiver.

- Be aware of inexpensive corded telephones

Install an RF filter at the telephone as a logical first step when attempting to cure a radio frequency interference problem in a nearby telephone.

- Snap filters over telephone power cord
- Snap filters over curly cord
- Snap filters on the actual incoming telephone line cord

- The more you add, the less likely you’ll have interference
The following may be useful in correcting a radio frequency interference problem:

- Snap-on ferrite chokes;
- Low-pass and high-pass filters;
- Band-reject and band-pass filters. All of these choices are correct.
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If a "Part 15" device in your neighbor’s home is causing harmful interference to your amateur station:

- Work with your neighbor to identify the offending device;
- Politely inform your neighbor about the rules that require him to stop using the device if it causes interference;
- Check your station and make sure it meets the standards of good amateur practice.

A simple snap-on choke filter like this one can help resolve harmful interference problems on Part 15 devices.

All of these choices are correct.
Element 2 Technician Class Question Pool

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What might be the problem if you receive a report that your audio signal through the repeater is distorted or unintelligible?

A. Your transmitter may be slightly off frequency
B. Your batteries may be running low
C. You could be in a bad location
D. All of these choices are correct
What may happen if a transmitter is operated with the microphone gain set too high?

A. The output power might be too high
B. The output signal might become distorted
C. The frequency might vary
D. The SWR might increase
What can you do if you are told your FM handheld or mobile transceiver is over deviating?

A. Talk louder into the microphone
B. Let the transceiver cool off
C. Change to a higher power level
D. Talk farther away from the microphone
what should you do if you receive a report that your station’s transmissions are causing splatter or interference on nearby frequencies?

A. Increase transmit power
B. Change mode of transmission
C. Report the interference to the equipment manufacturer
D. Check your transmitter for off-frequency operation or spurious emissions
Which of the following would reduce ignition interference to a receiver?

A. Change frequency slightly
B. Decrease the squelch setting
C. Turn on the noise blanker
D. Use the RIT control
What could be happening if another operator reports a variable high-pitched whine on the audio from your mobile transmitter?

A. Your microphone is picking up noise from an open window
B. You have the volume on your receiver set too high
C. You need to adjust your squelch control
D. Noise on the vehicle’s electrical system is being transmitted along with your speech audio
What is the source of a high-pitched whine that varies with engine speed in a mobile transceiver’s receive audio?

A. The ignition system
B. The alternator
C. The electric fuel pump
D. Anti-lock braking system controllers
Which would you use to reduce RF current flowing on the shield of an audio cable?

A. Band-pass filter
B. Low-pass filter
C. Preamplifier
D. Ferrite choke
T4A05  What type of filter should be connected to a TV receiver as the first step in trying to prevent overload from a nearby 2 meter transmitter?

A. Low-pass filter
B. High-pass filter
C. Band-pass filter
D. Band-reject filter
T4A04 Where must a filter be installed to reduce harmonic emissions?

A. Between the transmitter and the antenna
B. Between the receiver and the transmitter
C. At the station power supply
D. At the microphone
Which of the following may be a cause of radio frequency interference?

A. Fundamental overload
B. Harmonics
C. Spurious emissions
D. All of these choices are correct
What is a symptom of RF feedback in a transmitter or transceiver?

A. Excessive SWR at the antenna connection
B. The transmitter will not stay on the desired frequency
C. Reports of garbled, distorted, or unintelligible transmissions
D. Frequent blowing of power supply fuses
What should you do first if someone tells you that your station’s transmissions are interfering with their radio or TV reception?

A. Make sure that your station is functioning properly and that it does not cause interference to your own television
B. Immediately turn off your transmitter and contact the nearest FCC office for assistance
C. Tell them that your license gives you the right to transmit and nothing can be done to reduce the interference
D. Continue operating normally because your equipment cannot possibly cause any interference
What is the most likely cause of interference to a non-cordless telephone from a nearby transmitter?

A. Harmonics from the transmitter
B. The telephone is inadvertently acting as a radio receiver
C. Poor station grounding
D. Improper transmitter adjustment
What is a logical first step when attempting to cure a radio frequency interference problem in a nearby telephone?

A. Install a low-pass filter at the transmitter
B. Install a high-pass filter at the transmitter
C. Install an RF filter at the telephone
D. Improve station grounding
Which of the following may be useful in correcting a radio frequency interference problem?

A. Snap-on ferrite chokes
B. Low-pass and high-pass filters
C. band-reject and band-pass filters
D. All of these choices are correct
A. Work with your neighbor to identify the offending device
B. Politely inform your neighbor about the rules that require him to stop using the device if it causes interference
C. Check your station and make sure it meets the standards of good amateur practice
D. All of these choices are correct