

Amateur Radio Direction Finding (Fox Hunting)





What is Radio Direction Finding and Fox Hunting?



- The purpose of Amateur Radio Direction Finding (ARDF) is to locate a radio signal. That signal can be some sort of interference, an emergency beacon, or one we transmit for fox hunting.
- Fox hunting is an activity wherein participants use radio direction finding techniques to locate one or more radio transmitters hidden within a designated search area.



Why do we need these skills?



- Locating Harmful Interference
 - Intentional interference
 - Stuck transmitters
 - Bad behavior
 - Local noise sources
 - Computers
 - Electric fences
- Search and Rescue
 - ELT/EPIRBs
 - FRS/ham radios
 - Wildlife location
 - Black boxes
 - Stole cars (lo jack)
- FOR FUN!!





Fox Hunting Fun



- Working with others
- Being outside
- Competitions
- Building own equipment
- Fox hunting can be done anywhere
 - Parks
 - Cities
 - Forests





Equipment Needed



- Fox transmitter
- Directional yagi antenna
- Omni direction antenna
- Radio receiver
- Map and compass





Optional Equipment



- Doppler scanner
- Attenuator
- Loop antenna





Fox Hunting Complications



- ❑ Terrain
- ❑ Buildings
- ❑ Trees
- ❑ Power lines
- ❑ Water towers
- ❑ Reflection
- ❑ Multipath
- ❑ Antenna





Strategies



- ❑ Tuning off frequency
- ❑ Removing the antenna
- ❑ Signal strength and clarity
- ❑ Body blocking
- ❑ 3rd harmonics
- ❑ Triangulation
- ❑ Attenuators





Strategies: Body blocking / Antenna removal



- Body blocking is using your body to block the signal from the transmitter in an attempt to determine direction.
- Remove the antenna and listen if you can still hear the transmitter. This works when you are close to the transmitter.



Strategies: Signal strength and clarity



- Most radios have a signal strength meter on them. This is a signal strength meter.
- The more of the black bars, the stronger the signal.
- Also listen to the transmitter tone, is it clear or is covered by static





Strategies: Tuning off Frequency



Fox transmitter frequency is 146.580, you could tune your radio to:

- 146.570
- 146.575
- 146.585
- 146.590

When your radio is tuned off frequency, the closer you are to the transmitter, the stronger the signal.





Strategies: 3rd Harmonics



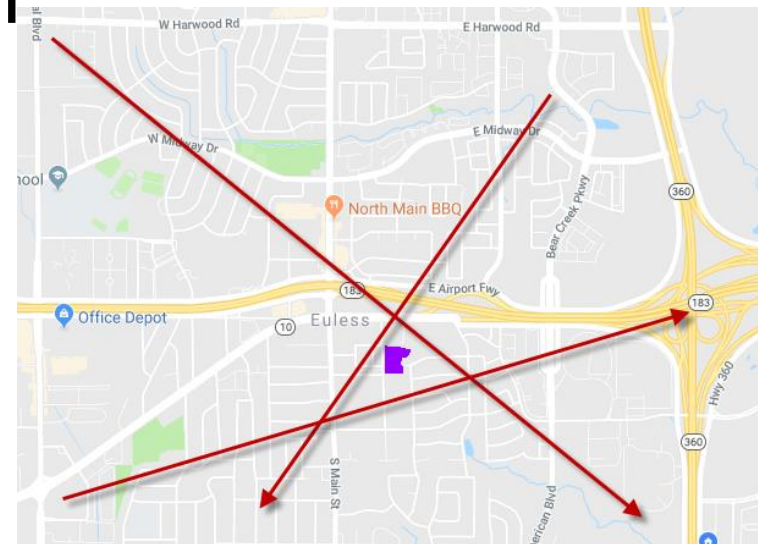
- A harmonic frequency is a regular and repeating multiple of an original wave pattern, known as a fundamental frequency.
- Fox transmitter frequency is 146.580, you could tune your radio to the 3rd harmonic frequency of 439.740.
- To figure the 3rd harmonic multiply your fundamental frequency by 3.
- Using the 3rd harmonic frequency works the same as tuning off frequency. The closer to the transmitter, the stronger the signal.



Strategies: Triangulation



- The area where the 3 lines form a triangle is the highest probability of where the transmitter is located.
- Accuracy depends on the complications mentioned in a proceeding slide.
- Purple is transmitter location.





Setting Up Your Radio



- Tune to frequency
- Turn off squelch
- Attach desired antenna





Final Notes

- If you find the fox:
 - please to not pick it up
 - please do not draw attention to the fox after you found it
 - we want others to have a chance to practice their skills in finding the fox.
- Do not transmit during the fox hunt
 - this could damage your radio
 - interferes with others trying to find the fox



Questions?



Let's Find that
Pesky Fox!