

Welcome to the Transmitter Hunt!



<https://sites.google.com/site/w6uqhamradioclub>

Introduction

- “Fox hunt” = hide-and-seek for a hidden transmitter, aka RDF (radio direction finding)
- **Why?**
 - Review the basics of operating your radio
 - Insight about radio signals around you and about antennas
 - Hands-on experience with hunting mystery signals
 - Outdoor time with other people esp. hams
- **What you will do:**
 - Tune your radio to a fox frequency (**146.565** fox #1 and **144.250** fox #2)
 - Walk around (use tips below) and get an idea of a general location. Triangulate.
 - Then when you get close, the signal will be so strong it will seem to be coming from everywhere
 - Use “attenuation” tips below to reduce the signal strength and home in

Radio preparations

Know your radio:

- How to tune your HT to different frequencies
- How to turn off squelch
- More advanced: how to store some frequencies into a band or group and scan them

Have:

- Cheat sheet for storing frequencies into your HT and turning off squelch
- Frequencies stored into own group (band) to be scanned
- Stock short antenna
- optional: tape-measure yagi (directional antenna)
- Optional: map of the hunt area, pencil, straightedge
- advanced+ : attenuator device for antenna (be sure radio transmit is disabled or min pwr!)

Store in memory for convenience:

- Main fox frequencies (see below)
- 3d harmonics (see below)
- advanced: put in own band
- advanced: scan that band

Frequencies

- **146.565** FM simplex (no tone, no offset) -- national transmitter hunt frequency
- **144.250** FM simplex – common secondary t-hunt frequency
- Third harmonics (fancy way to say multiply by 3). Notice they are in the 70 cm band area, which most HTs and their antennas will handle!
 - $146.565 \times 3 = \mathbf{439.695}$ FM simplex
 - $144.250 \times 3 = \mathbf{432.750}$ FM simplex

Tips for hunting

General tips

- **turn off squelch**
- watch the S-meter, don't rely on volume! (radio may have “automatic gain control” (agc))
- start on main fox frequency
- use **“body fade”** if you have a non-directional antenna (ie, use your body as a shield)
- use body fade plus some kind of full or partial shielding (eg a tube covered with tinfoil)
- use a tape-measure yagi or other directional antenna
- Don't just go straight for the source – walk around, walk away, and **triangulate!**
- **If you have a ¼-wave whip** – max gain broadside, null in the direction of tip of antenna.
- Can you triangulate with a friend on a map?

When you get close, you will need some “attenuation” (a way to reduce the signal strength). Some ways to attenuate the signal

- change **orientation** aka “polarization” of antenna (horizontal v vertical v anything in between)
- if using a yagi, **turn around** and find the “null”
- change to a **less sensitive** antenna (eg switch to the short stock “rubber ducky” from your yagi)
- **tune off** by a few Hz
- tune to a **harmonic** (eg 3d harmonic, which is usually available on an HT – see above)
- use an even **worse antenna** (eg a paperclip in the center hole)
- **remove** antenna entirely
- combine these things
- take off antenna, lower radio into a faraday cage (tinfoil covered tube). Can adjust attenuation this way. A slit in this tube may give directionality?
- Use a dedicated active or passive attenuator (additional equipment)

Other resources

- Great presentation: <https://kk4gq.org/pdf/FoxHunting101-for-KSUARC-KI4ASK-October-2020-PDF-version.pdf>
- Local RDF group (who do driving foxhunts) <http://www.rdf-sf.org/>
- National information <http://www.homingin.com/>

Happy hunting!

73,
W6EFI

Foxmaster preparation

- HT plus stock duckie
- tape-measure yagi-uda
- SMA → BNC adaptors
- Check fox frequency matches handout
- Orange flags on antennas
- Charge batteries
- Tape bottom caps
- Copies of handout
- Laptop and USB cable for programming foxes (eg to change power)
- **General event items**
 - Weeks ahead of time -- publicity
 - Event banner and hanger
 - Name tags and sharpies
 - Keep count, ask for how they found out about the event
 - doughnuts or sandwiches, water, coffee