Cherokee Amateur Radio Society
EFHW Antennas
By WB9GFA Stan

CHEROKEE AMATEUR RADIO SOCIETY

WX4CAR

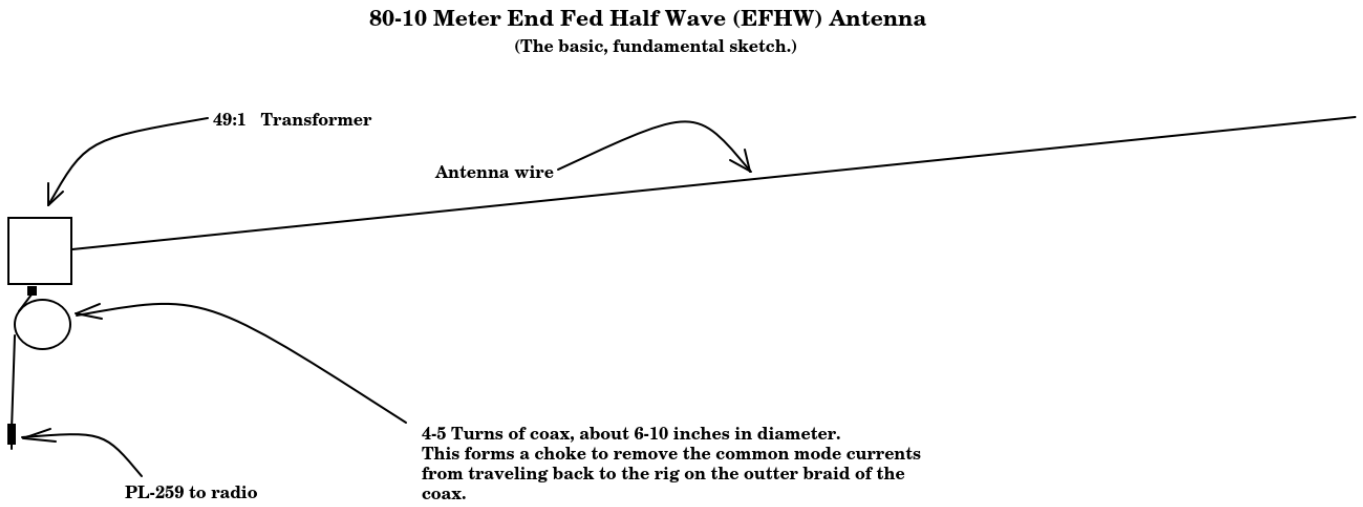
Agenda

1. Overview
2. References
3. Materials
4. Tools
5. WB9GFA EFHW Notes and Final Details
6. Matching Unit
7. Installation Pics
8. WB9GFA-Final Diagram
9. Q&A

Overview

EFHW Antennas

- **Good for 500 Watts or less.**
- **Can be built for less than $100.00**
- **Maybe around $70.00 ??**



myantennas.com version:

250 Watt continuous: ~ $210.00
350 Watt continuous: ~ $250.00

References

Mike Mitchell:
https://www.youtube.com/watch?v=ekP4I-GRSJQ&t=13s

Steve Ellington:
https://www.youtube.com/watch?v=BpdpkUEW39o

EFHW Starts at 16:07 minutes from beginning.
I copied this fellow's work almost verbatim.
This is one of my major sources of info for my antenna.

Multi-Band_EFHW.PDF

Chrome HTML Document

Steve Ellington:
Step by step instructions on the transformer.
https://www.youtube.com/watch?v=sty7RlXQoJI

I pretty much copied this fellow's transformer build.
He used coax connection to the transformer, but I opened it up to two post type connections because of going to my remote tuner, which is right next to this transformer box.

Also, I did not put in the vent he recommended.

Steve Nichols:
http://www.infotechcomms.co.uk/downloads/Multi_band_EFHW.pdf

Very good 9 page pdf write up on his version of this antenna.
Includes some theory of current/voltage wave distribution along the half wave antenna and why it works.
This is one of my major sources of info for my antenna.

Materials

Outdoor electrical box: Home Depot SKU# 499982 (4 x 4 x 2”) ~ $10.00
Internet #100404097
Model #E989NNJ-CAR
Store SKU #499982
Store SO SKU #1001364088

Fair-Rite Toroid Cores: 5952003801 Mouser Electronics number: 623-5952003801
240-52 Toroid Cores
(need at least 2, I recommend 3, and I bought extras)
~$11.00 ea

10-24 and 6-32 Stainless Steel hardware as needed.

10kV Capacitors from ebay:
100pF Qty=10 ~ $5.00
220pF Qty=10 ~ $9.00
470pF Qty=5 ~ $9.00

Materials

Antenna Wire: **https:www.thewireman.com(Always at major hamfests!)**

511-Antenna Wire, 14 AWG Copper-Clad Steel Stranded

$0.22 - $0.28 per foot, depending upon quantity purchased
This is bare wire; shiny at first, but oxidizes to dark color over time, so becomes more "stealthy".

531-Antenna Wire, 14 AWG Copper-Clad Steel Stranded HDPE Jacket

$0.31 - $0.40 per foot, depending upon quantity purchased
This is insulated wire, black… so a bit more "stealthy" immediately.
Also, easier handling, but insulation needs to be stripped as needed.

This stuff is strong, and won't stretch over time. Otherwise, use whatever you can get your hands on.

Note: Soft-drawn copper wire (like house power wiring) will stretch over time, thus changing the length of your antenna wire. That's fine, as long as you are ok with pulling your antenna down whenever needed to re-trim its length.

Tools

Basic hand tools.

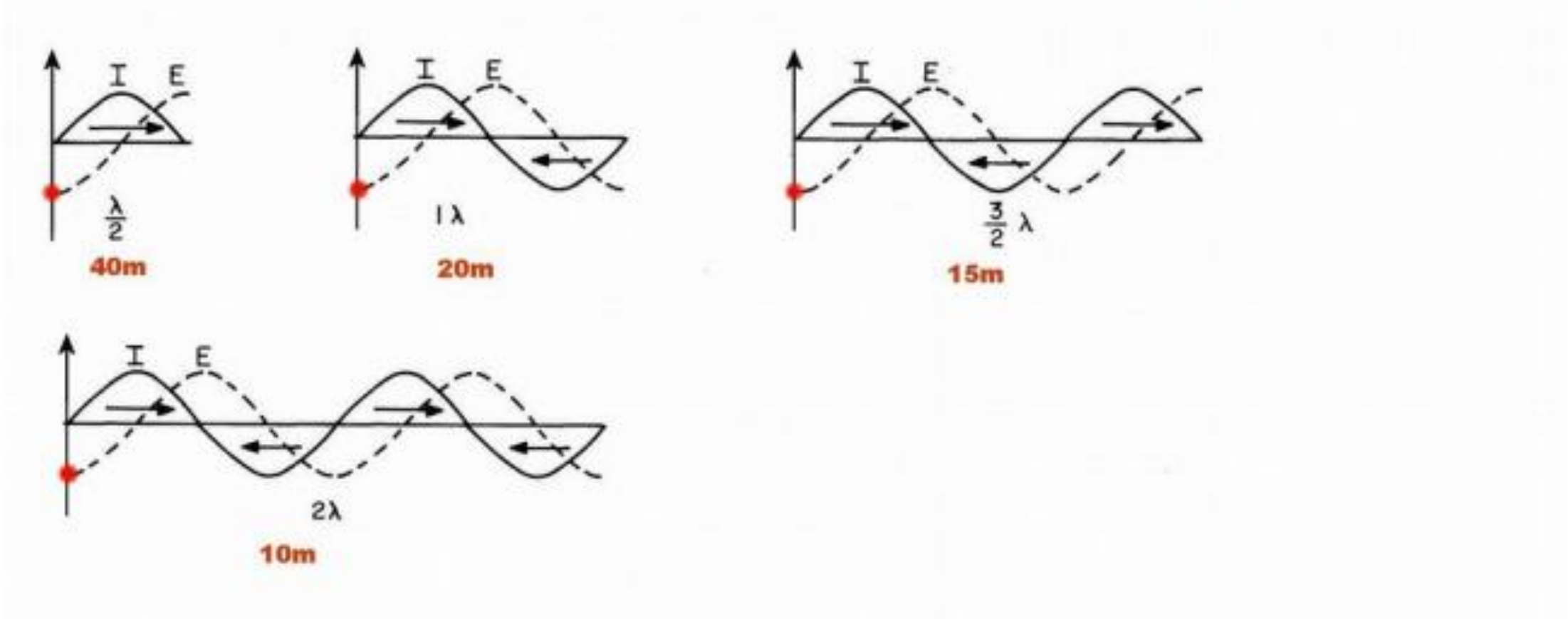
- **Soldering gun, or equivalent.**

(I'm OCD about connections, and nearly always solder any connection.)

- **My remote antenna tuner, if you care: MFJ-993BRT (can handle about $300 Watts RF).**
  ~ $310.00 Probably don't need this, but makes perfect match to radio.

Waveform Theory

How the antenna works as a multiple of half wave lengths on the higher bands:



WB9GFA EFHW Notes and Final Details

Click ICON

WB9GFA Matching Unit

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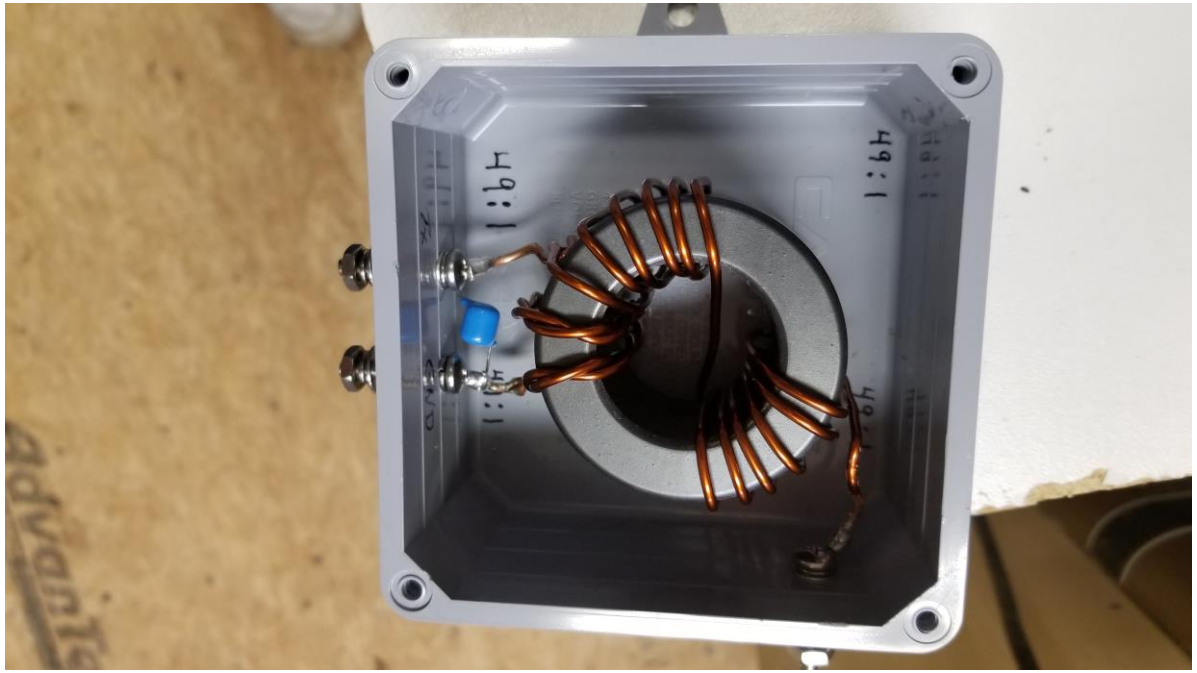

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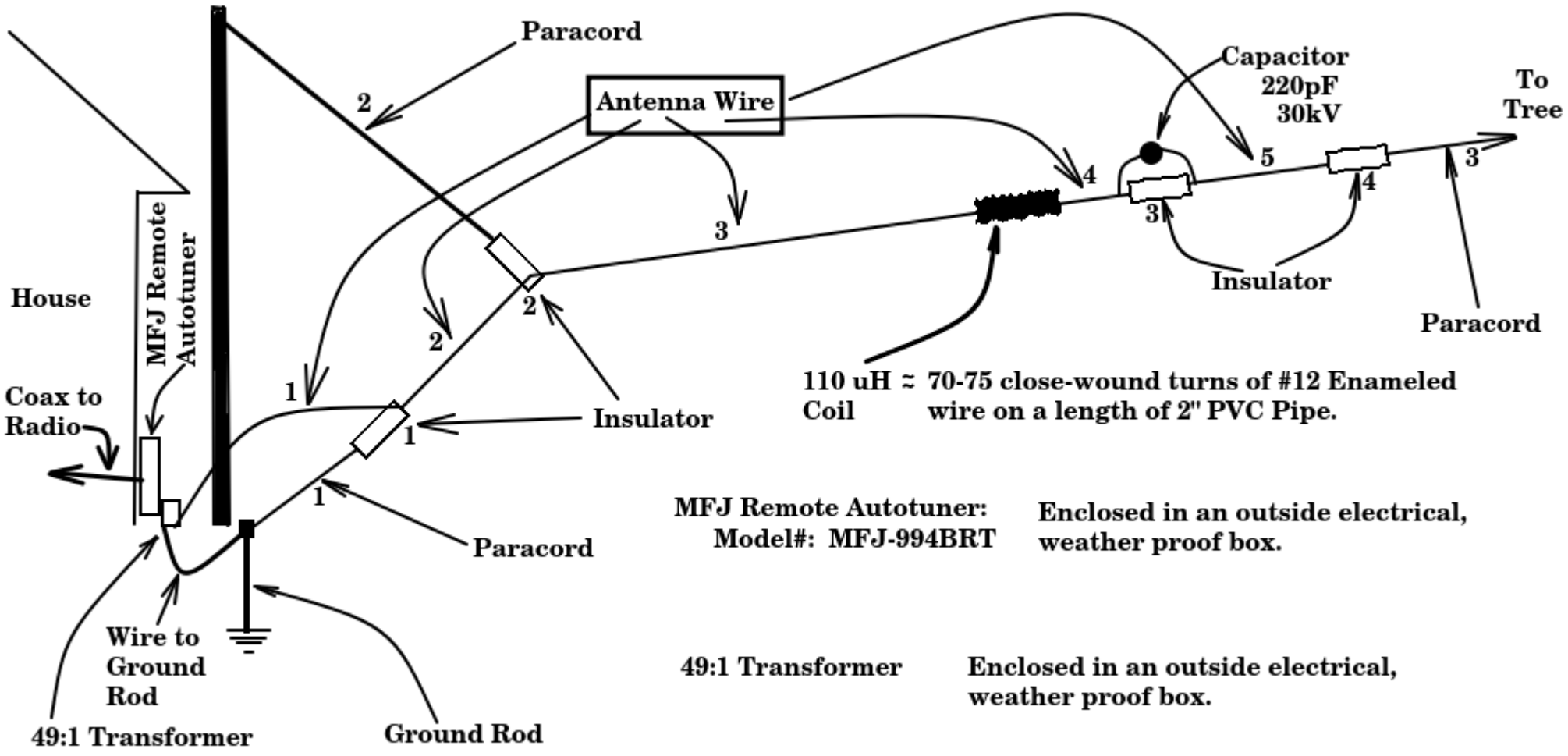
WB9GFA-Final Diagram



Q&A

THANK YOU