

# Field Expedient HF Antennas Contest For 2026 ARRL Field Day

7 APR 2026

Lew Thompson

W5IFQ

# Background & Goals

- **BACKGROUND:**

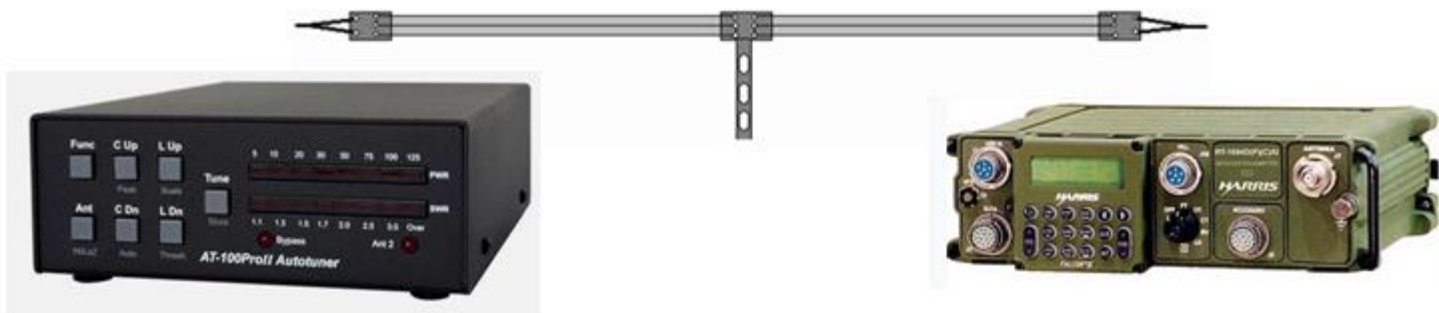
- AARC has traditionally supplied most all the HF antennas used for its Field Day activities.
- In the last few years, all HF antennas were supplied by either by me, W5IFQ, or Jeff, N5MFW.
- I have done presentations on both resonant and non resonant HF Antennas.

- **GOAL:**

- Encourage the construction and use of Field Expedient antennas during this year's ARRL Field Day.

- **DISCUSSION:**

- AARC's traditional goal for FD have not included being competitive, so experimenting with Field Expedient HF antennas can be a worthy FD goal.
- FD provides a very large number of "contacts" spread over CONUS, Canada and beyond. While you can use WSPR and other propagation evaluation tools for testing, there is nothing like SSB contacts with your own home build antenna. This goal also coincides with Amateur Radio's goal of demonstrating long range emergency communications.

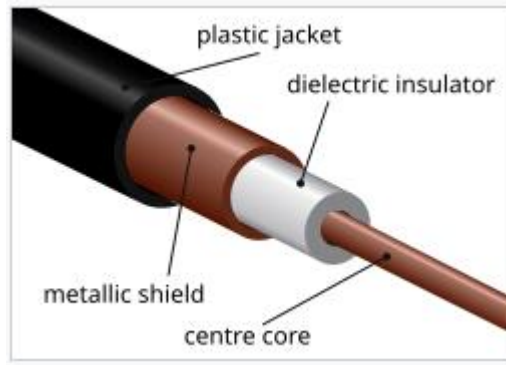


# Wide-Band HF Antennas

Lew Thompson

W5IFQ

3 FEB 2026



# Coaxial Cables (Requires Resonant Antennas)

W5IFQ

4 NOV 2025

# Logistics of Contest

- **AARC will supply the following:**
  - 32 ft. mast with a rope and pulley;
  - HF Auto tuner, (LDG AT-1000Proll) at rig;
  - HF remote auto-tuner with bias-T's (CG-3000 with W5IFQ bias-T's);
  - 4:1 and 1:1 baluns;
  - Coaxial cable from rig to mast base;
  - Dedicated HF rig with built-in tuner (3:1 SWR maximum).
  - Laptop with EZNEC Pro available for modeling your antenna. (W5IFQ will assist).
  - A sign-up schedule;
  - A MFJ-269B SWR Analyzer;
  - N3FJP Network Software
  - Prize(s)
    - Members who makes the largest number of FD contacts;
    - Each contestant will be given equal time periods to make SSB voice contacts;
    - Contacts must be scored using N3FJP Network software (using contestant's initials).

# Field Expedient Antenna Contest Rules

- All antennas components must be home made with the following exceptions:
  - Store-bought dipole center supports i.e., Ladder-loc, DX Engineering EZ-Build or similar parts (see pages 12 and 17);
  - Dipole end insulators;
  - Special baluns like 49:1 (1:1 and 4:1 baluns will be provided);
  - ARRL End-Fed Half-Wavelength kit (contestant must build kit);
- All Traps must be home made;
- Vertical metal masts must be made from readily available aluminum or steel tubing or pipe.
- Dielectric masts for support of vertical wire can be either fiberglass telescoping or fixed section masts;
- Maximum RF power to be 100 watts.
- Mode to be SSB Voice.
- Operation must be in HF FD frequency bands including 6m.
- Only complete FD exchanges will be scored.
- Contestants will each have one-hour “mast-time” to tune antenna. No time limit on verticals and other antennas not using the provided mast hoist assembly.

# Potential Antennas

- Recommendations:
  - The easiest antennas to build will probably be Wide-Band HF dipoles and long-wires that require an external tuner.
  - Both a rig-located and remote auto-tuners will be available.
- Potential Antennas:
  - Wide-band dipoles (inverted-V's)
  - Wide-band fan dipoles
  - Long-wire
  - Verticals

# Examples of Field Expedient Antennas

- Wide-Band Antennas (requires external tuner):
  - Inverted-V dipole
  - Army NETCOM 66/44 Ladder-Line Fan Dipole
  - Army NETCOM 66/44 zip cord Fan Dipole
  - ARRL End-Fed Long-Wire Antenna Kit
- Resonant Antennas:
  - $\frac{1}{2} \lambda$  Vertical
  - $\frac{1}{2} \lambda$  dipole
  - End-Fed Half-Wave Long-Wire Antenna (must be cut to  $\frac{1}{2} \lambda$ )

# **EXAMPLES OF WIDE-BAND HF ANTENNAS**

**Note: All will require external wide-range tuner or auto-tuner**

**Tuners available at Field Day:**

**Remote – CG-3000 with bias-T's**

**LDG-AT-1000ProII, desk top**

# Wide-Band Dipole

Legs 1,2 – 33 ft. or cut to  $\frac{1}{4} \lambda$  each leg  
Height – 32 ft.  
End heights – 3 ft.

Transmission lines:

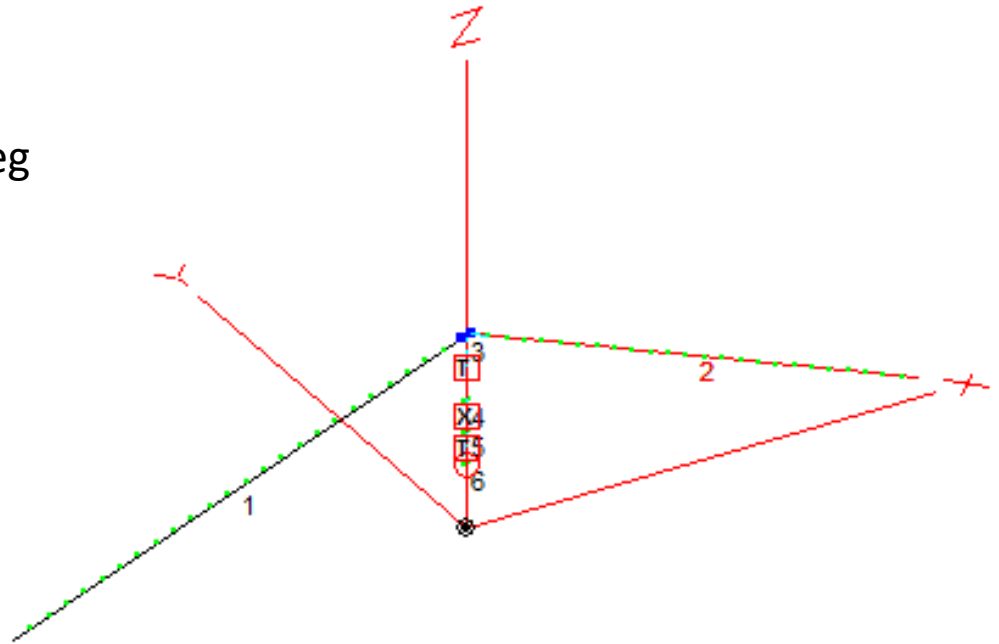
Ladder line – 450 ohm – 40 ft.

Coax – 50 ft. (RG-213)

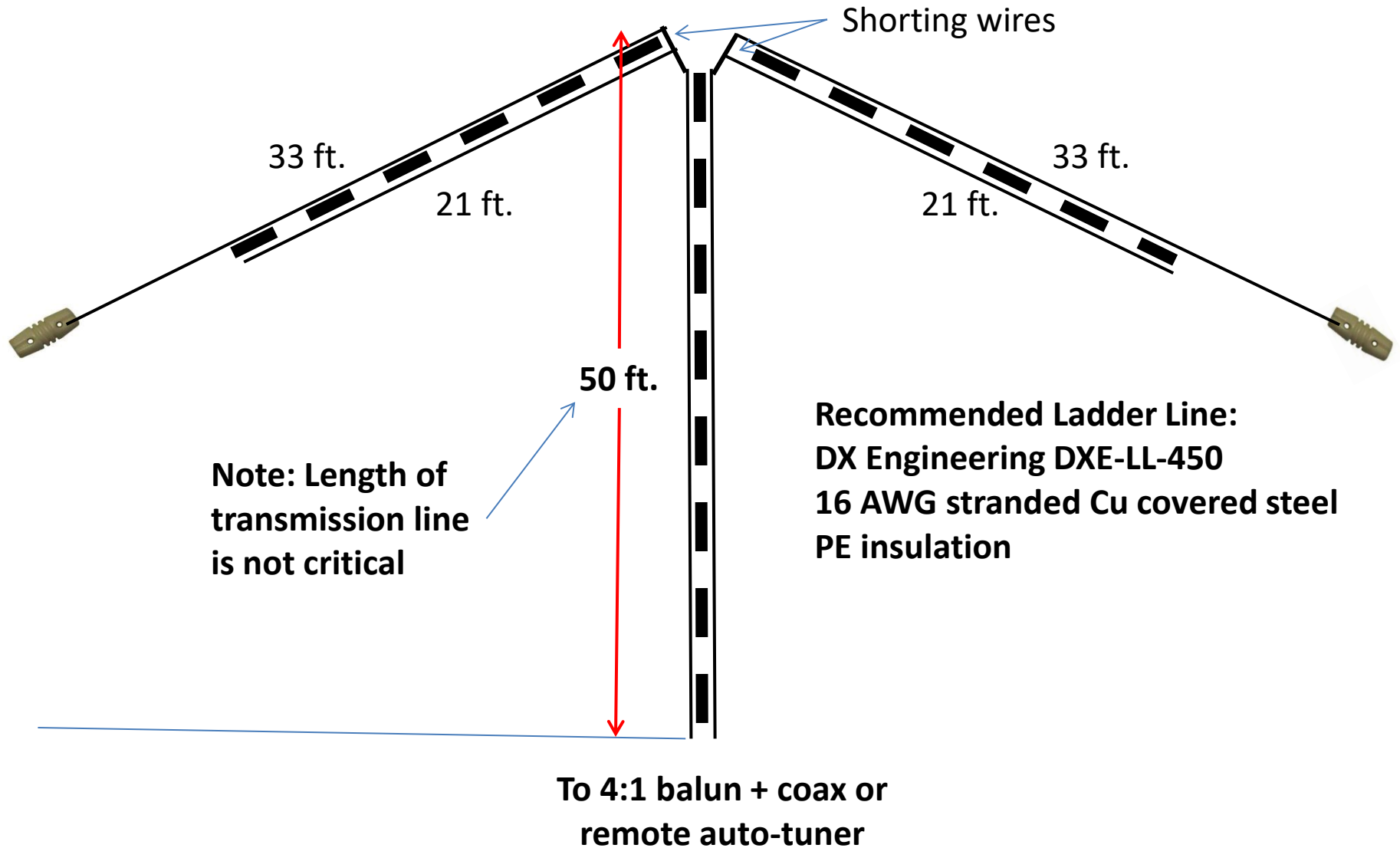
Transformer:

4:1 balun

Note: for optimum performance, total  
Length should not exceed  $1 \lambda$



# Dimensions for NETCOM 66/44 Fan



# Ladder-Loc™ Assembly

**WA1FFL LADDER-LOC**  
**WA1FFL Ladder Line Locking**  
**Center Insulator**  
HRO Discount Price: **\$16.95\***



# Complete Antenna (shortened to fit into photo)



# Rope Strain Relief Option

**NOTE: Tape connection and rope area with high quality electrician's Tape like Scotch 33.**

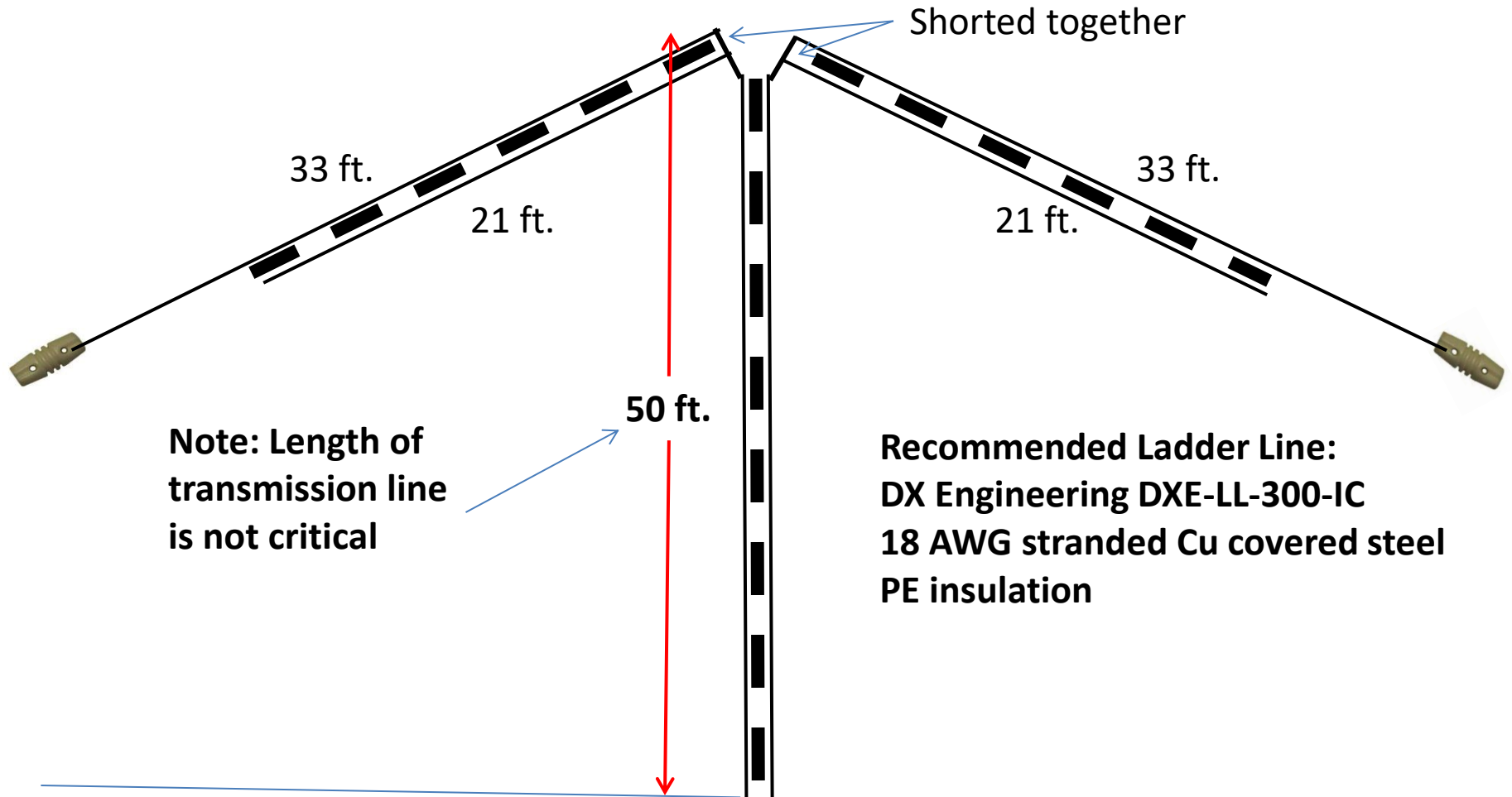


# Knotted Attachment Option

**Note: The knot is a Bowline.  
Tape or heat-shrink over  
Solder joint.  
Measure ladder line after  
tying knot. The wire used in  
the knots at both ends should  
not be included.**



# Dimensions for 300Ω NETCOM 66/44



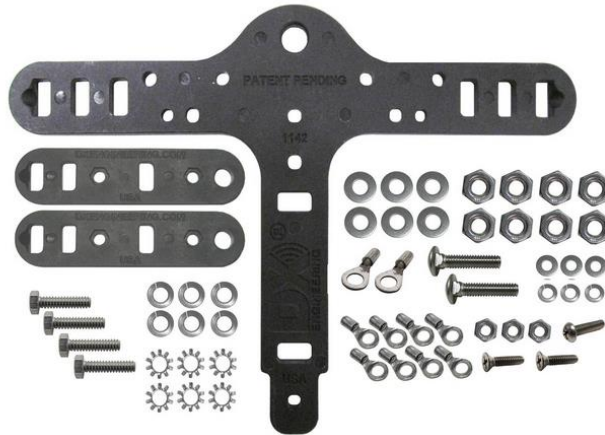
To 4:1 balun + coax or  
remote auto-tuner

# Materials List for 300Ω Antenna – page 1

<https://www.dxengineering.com/search/departments/antennas>

## DX Engineering EZ-BUILD® UWA Center-T and End Insulator Kits DXE-UWA-KIT

★★★★★ (23) Part Number: DXE-UWA-KIT



**\$30.49**

DX Engineering EZ-BUILD® UWA Center-T and End Insulator Kits >

Antenna Wire Components, Center and End Insulators, 4-Gauge Maximum Wire, Kit  
[See More Specifications](#)

In Stock (more than 10 available)

Estimated Ship Date: Today  
Would you rather pick it up? [Select Location](#)

CA Warning

1 [Add To Cart](#)

[Beat-A-Price Guarantee](#) [Wish List](#) [Compare](#)

[PayPal](#) Pay in 4 interest-free payments of \$7.63. [Learn more](#)

[Pay with DX Engineering Synchrony Car Care Super Card Credit Card.](#) [Learn how](#)

Share with your friends [f](#) [X](#) [p](#) [e](#)

## DX Engineering 300 Ohm Ladder Line DXE-LL300

★★★★★ (6) Part Number: DXE-LL300



**\$0.77**

DX Engineering 300 Ohm Ladder Line >

Ladder Line, 300 ohms, Window Style Parallel Wire Feedline, 18 AWG Stranded CCS, 2500 W, 0.88 VF, Per Foot  
[See More Specifications](#)

In Stock (more than 10 available)

Estimated Ship Date: Today  
Would you rather pick it up? [Select Location](#)

CA Warning

1 [Add To Cart](#)

[Beat-A-Price Guarantee](#) [Wish List](#) [Compare](#)

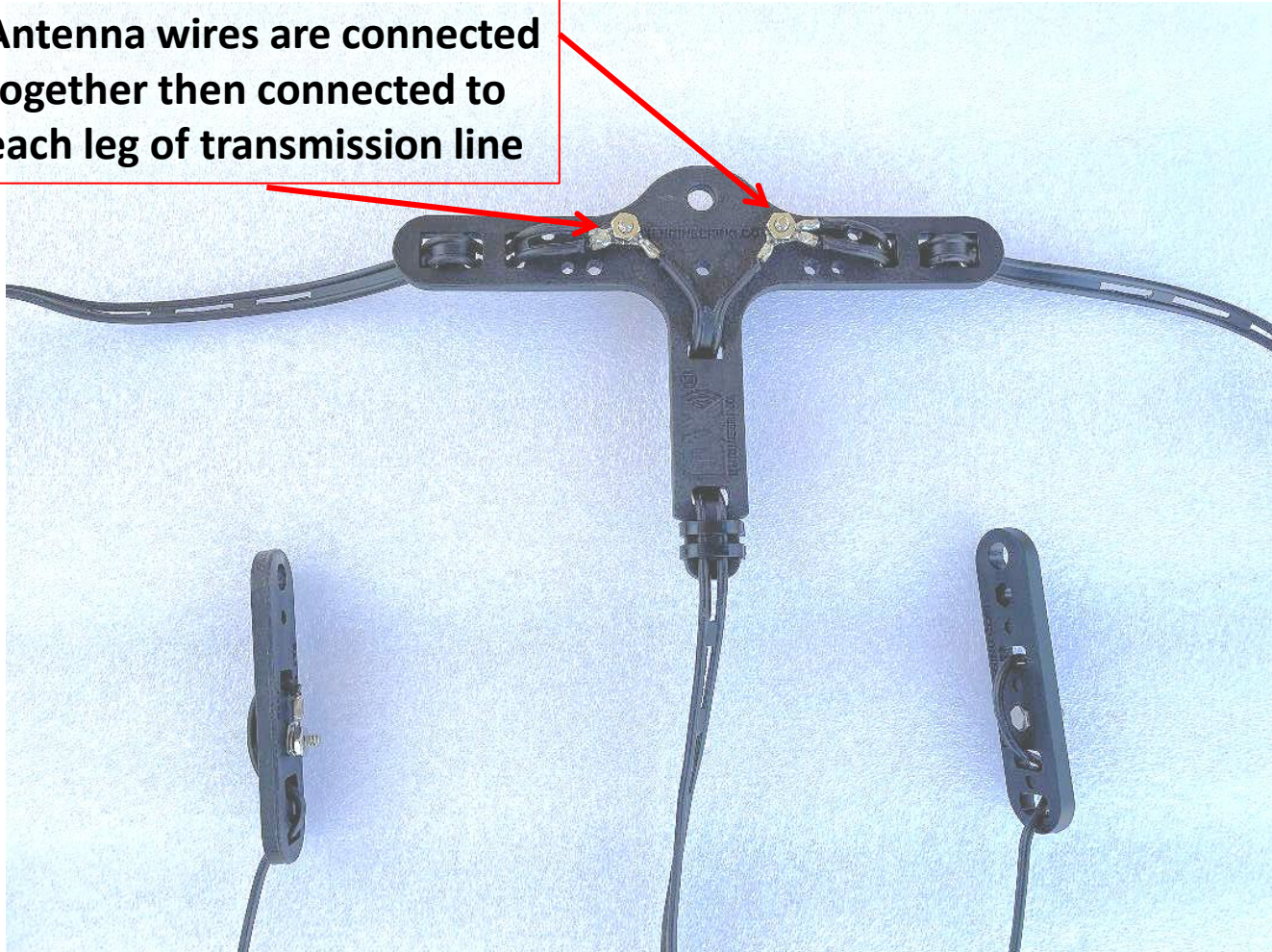
[PayPal](#) Pay in 4 interest-free payments on purchases of \$30-\$1,500. [Learn more](#)

Share with your friends [f](#) [X](#) [p](#) [e](#)

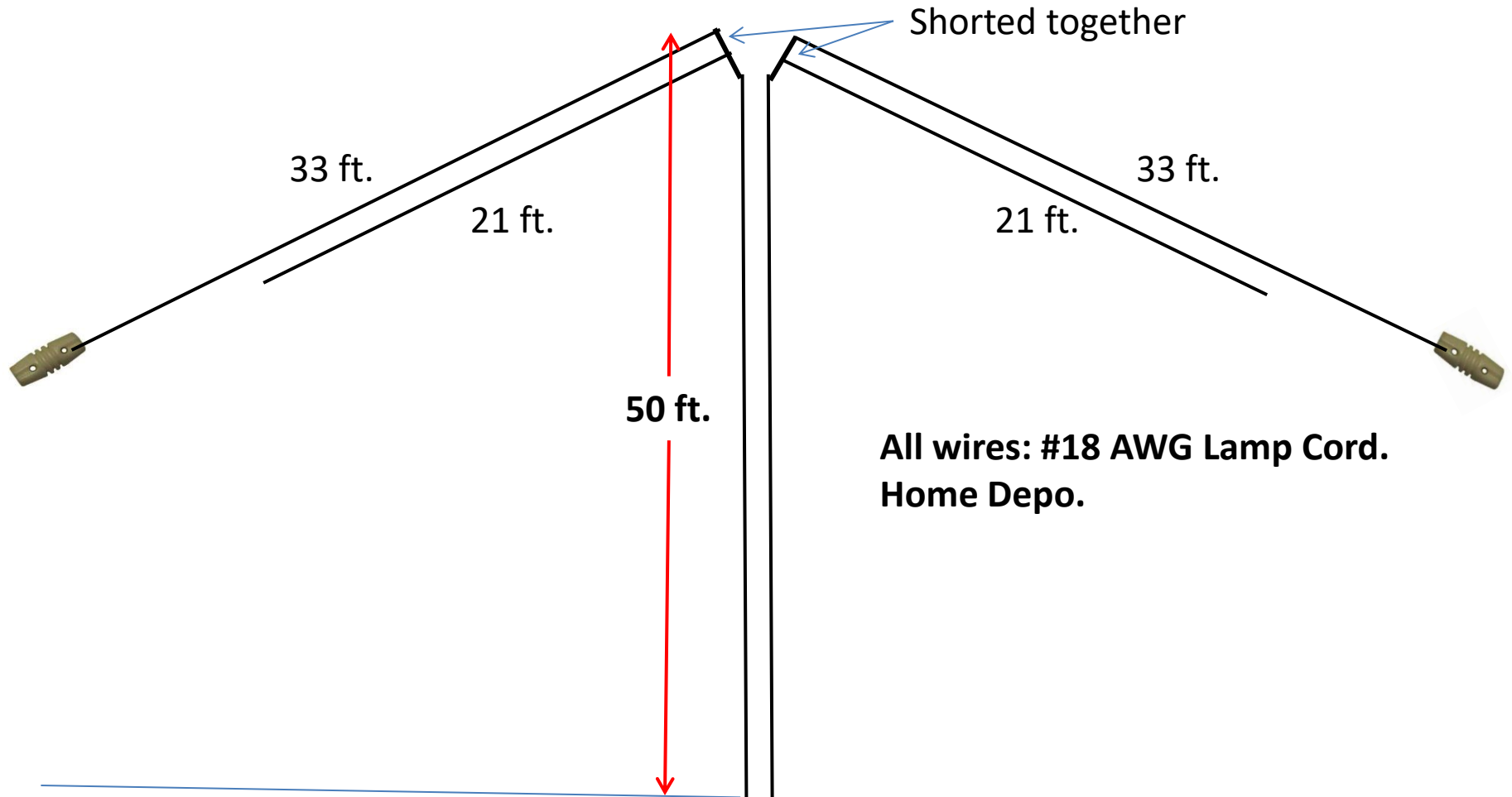
# Assembly of 300Ω Antenna

Terminals should be crimped and then soldered.

Antenna wires are connected together then connected to each leg of transmission line



# Dimensions for Lamp Cord Antenna



**All wires: #18 AWG Lamp Cord.  
Home Depo.**

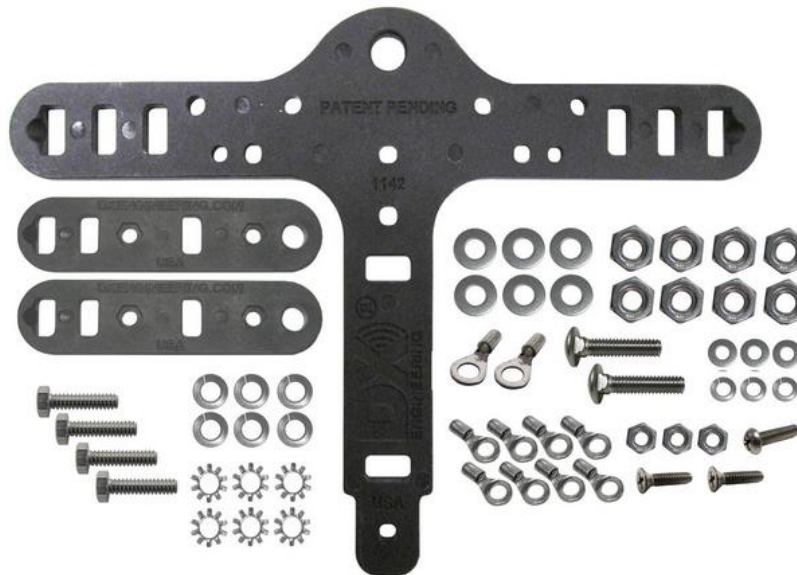
**To 4:1 balun + coax or  
remote auto-tuner**

# Center T and End Insulators Used for Home Tests

<https://www.dxengineering.com/search/department/antennas>

## DX Engineering EZ-BUILD® UWA Center-T and End Insulator Kits DXE-UWA-KIT

★★★★★ (23) Part Number: DXE-UWA-KIT



**\$30.49**

### DX Engineering EZ-BUILD® UWA Center-T and End Insulator Kits >

Antenna Wire Components, Center and End Insulators, 4-Gauge Maximum Wire, Kit

[See More Specifications](#)

**In Stock** (more than 10 available)

**Estimated Ship Date: Today**

Would you rather pick it up? [Select Location](#)

**CA Warning**

1

**Add To Cart**

**Beat-A-Price Guarantee** **Wish List** **Compare**

**PayPal** Pay in 4 interest-free payments of \$7.63. [Learn more](#)

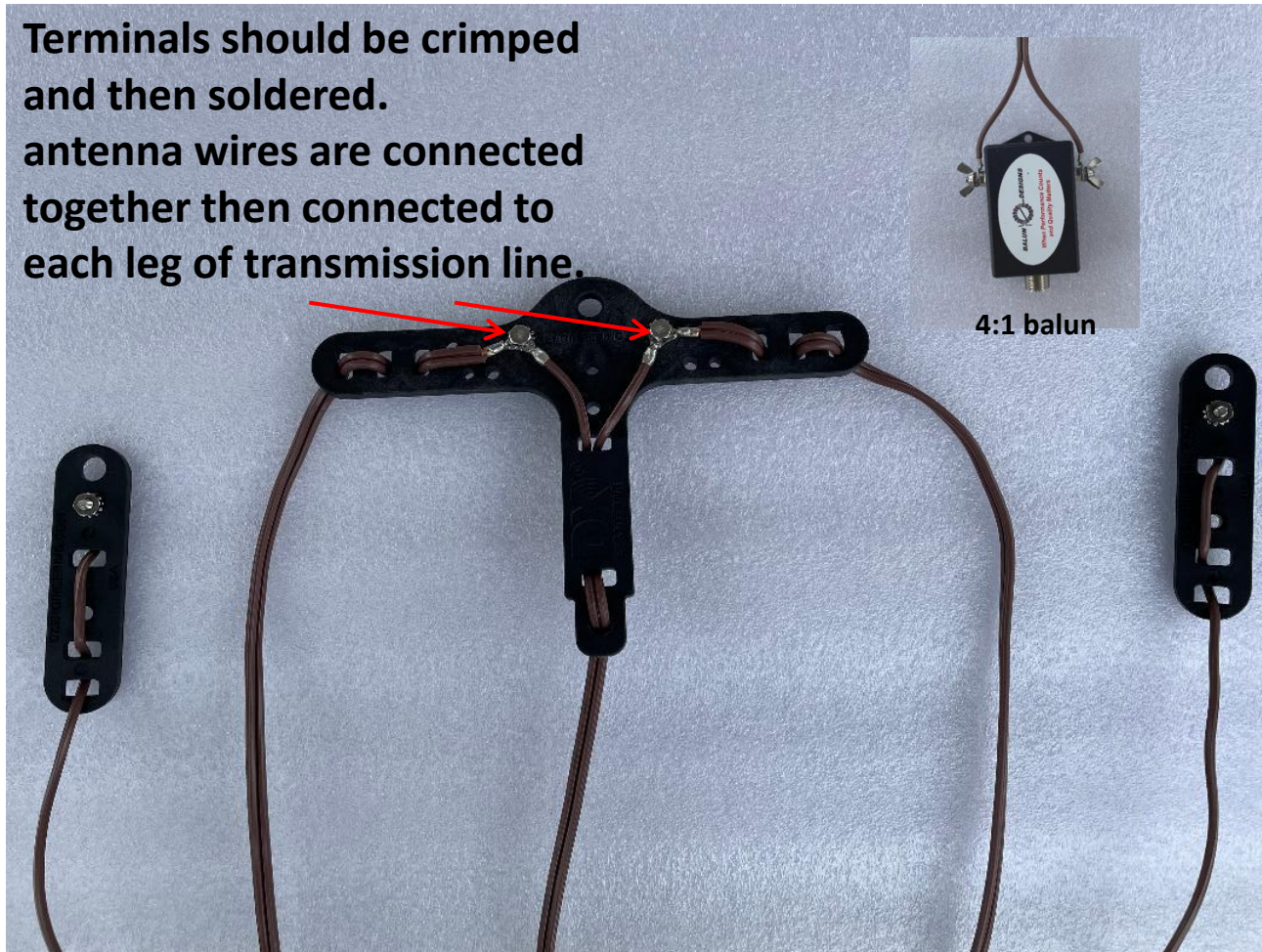
Pay with DX Engineering Synchrony Car Care Super Card Credit Card. [Learn how](#)

Share with your friends

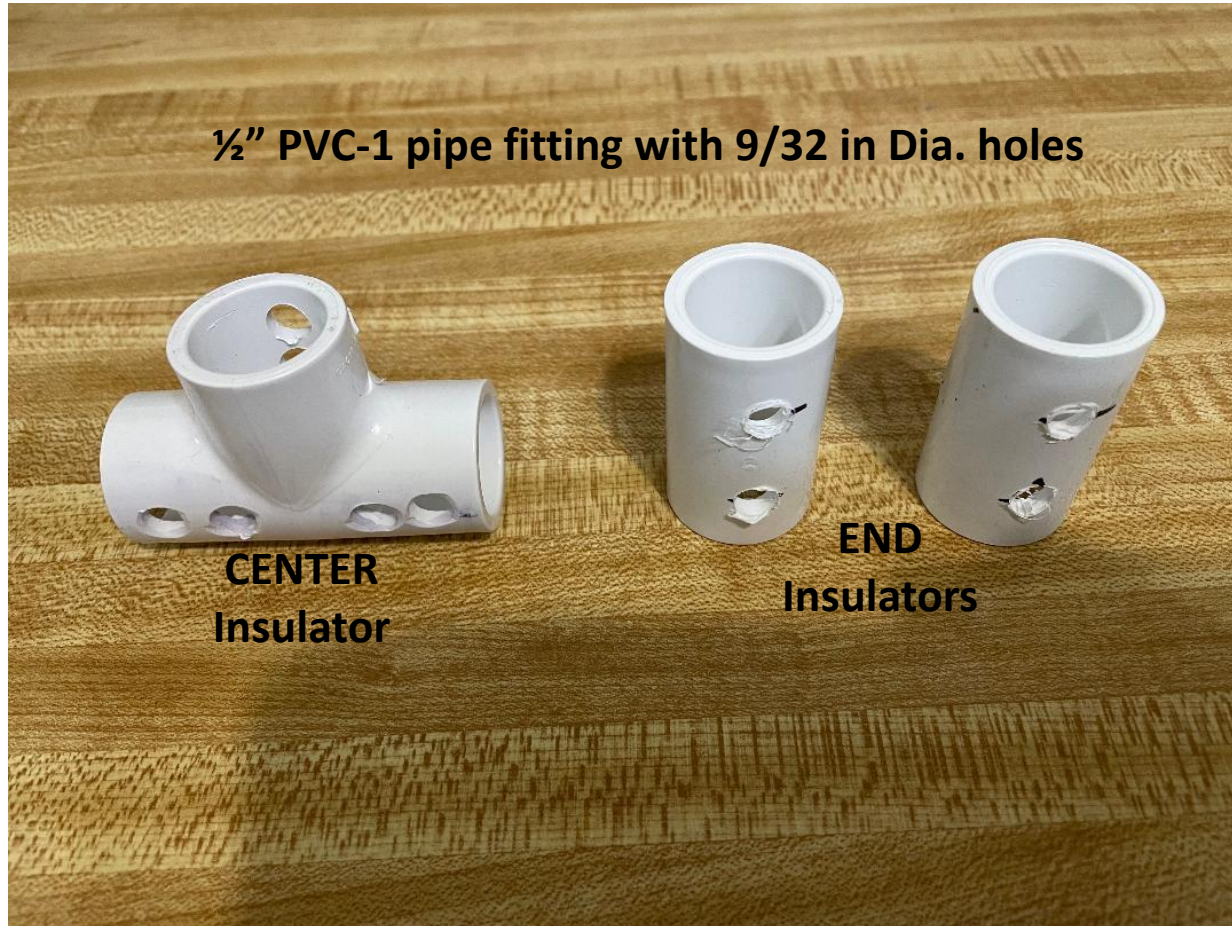


# Construction Details

Terminals should be crimped and then soldered.  
antenna wires are connected together then connected to each leg of transmission line.



# Alternate Center T and End Insulators (1/2 inch PVC pipe fittings)



# Antenna Wire – Home Depo



## By-the-Foot 16/2 Brown Stranded CU SPT-2 Lamp Wire

by [Southwire](#) >

★★★★★ (44)

SE Austin Store

✓ 195 in stock Aisle BW, Bay 036

Jacket Color: **Brown**



Total Wire Length (ft.): **1 ft**

- 1 ft**
- 25 ft
- 100 ft
- 250 ft



**68¢** /foot

Pickup at [SE Austin](#)

Delivering to [78704](#)

**Pickup** ✓

**Today**

195 in stock

**FREE**

**Delivery**

**Tue, Dec 23**

44 available

**FREE**

[Check Nearby Stores](#)

[Delivery Details](#)

**Delivery by Christmas**

ⓘ This item can only be purchased in quantities of 6 or r

# Required Balun for WB Antennas

<https://www.balundesigns.com/model-4110-4-1-current-balun-3-5-54-mhz-300-watts/>

**Note: This balun will be provide at Field Day Site**

**Model 4110 - 4:1 Current Balun - 3.5 - 54 MHz - 300 Watts**

Current production time 4-5 business days



**SKU:** 4110

**SHIPPING:** Calculated at Checkout

**\$68.95**

**SELECT MODEL:** REQUIRED

- Model 4110sw - Studs w/wing nuts
- Model 4110bt - Posts on Top

# End-Fed Half-Wave Antenna Kit



## END-FED HALF-WAVE ANTENNA KIT

ARRL has partnered with HF Kits to bring you this easy-to-build antenna kit: an end-fed half-wave (EFHW) antenna. We built it in the ARRL Lab, set it up outside, trimmed the wire for the lowest SWR, and got it on the air. Now it's your turn!



List Price: \$79.95

Quantity:

Save For Later

Add To Cart

### ITEM DETAILS:

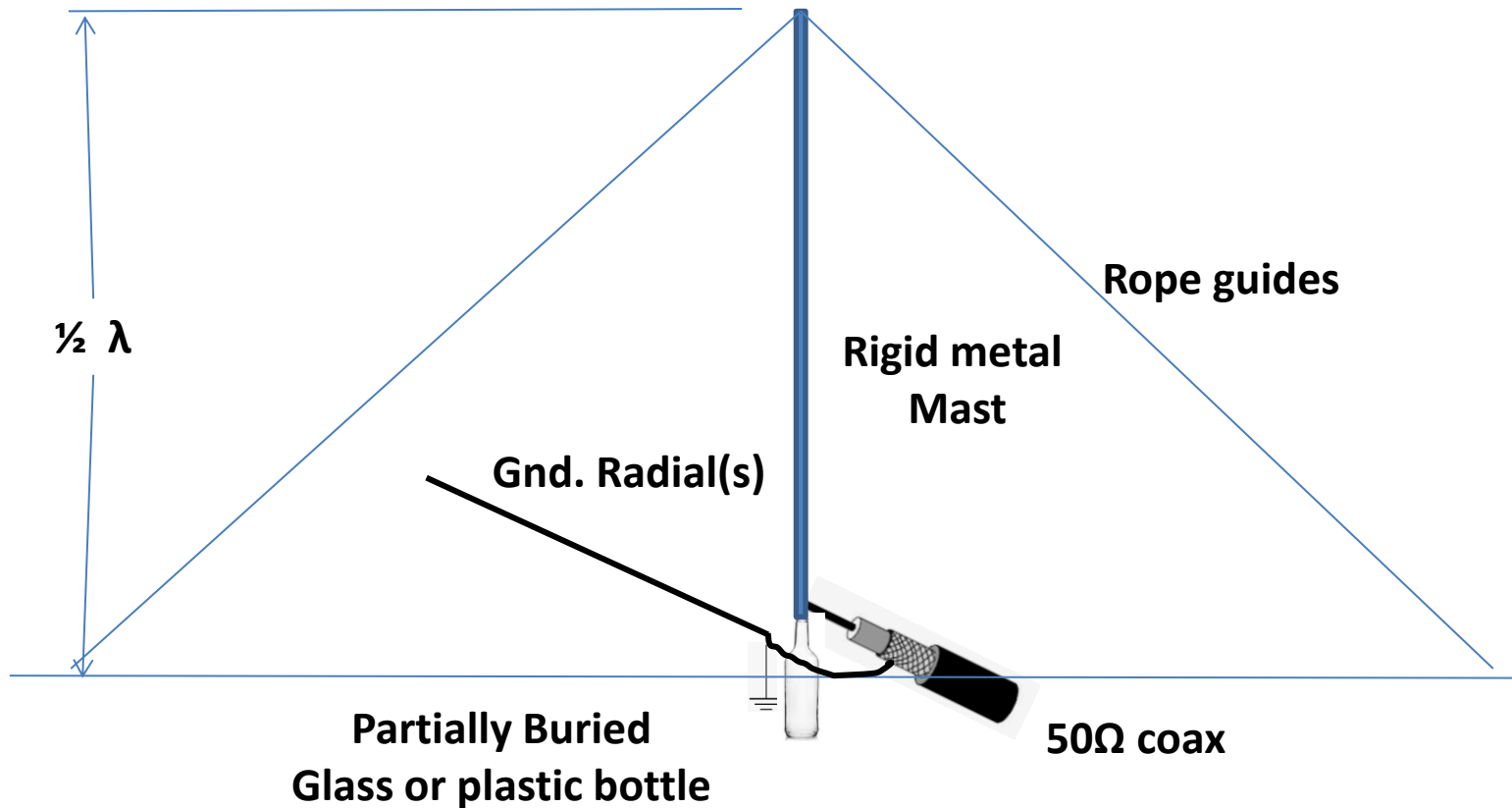
#### Get On the Air with an End-Fed Half-Wave Antenna!

The advantage of an EFHW is the ease of construction, it's versatility in a variety of installation configurations (sloping, horizontal, L, etc.), no tuner is needed, and this one works on 4 bands: 10, 15, 20, and 40 meters. We chose a 250-watt...

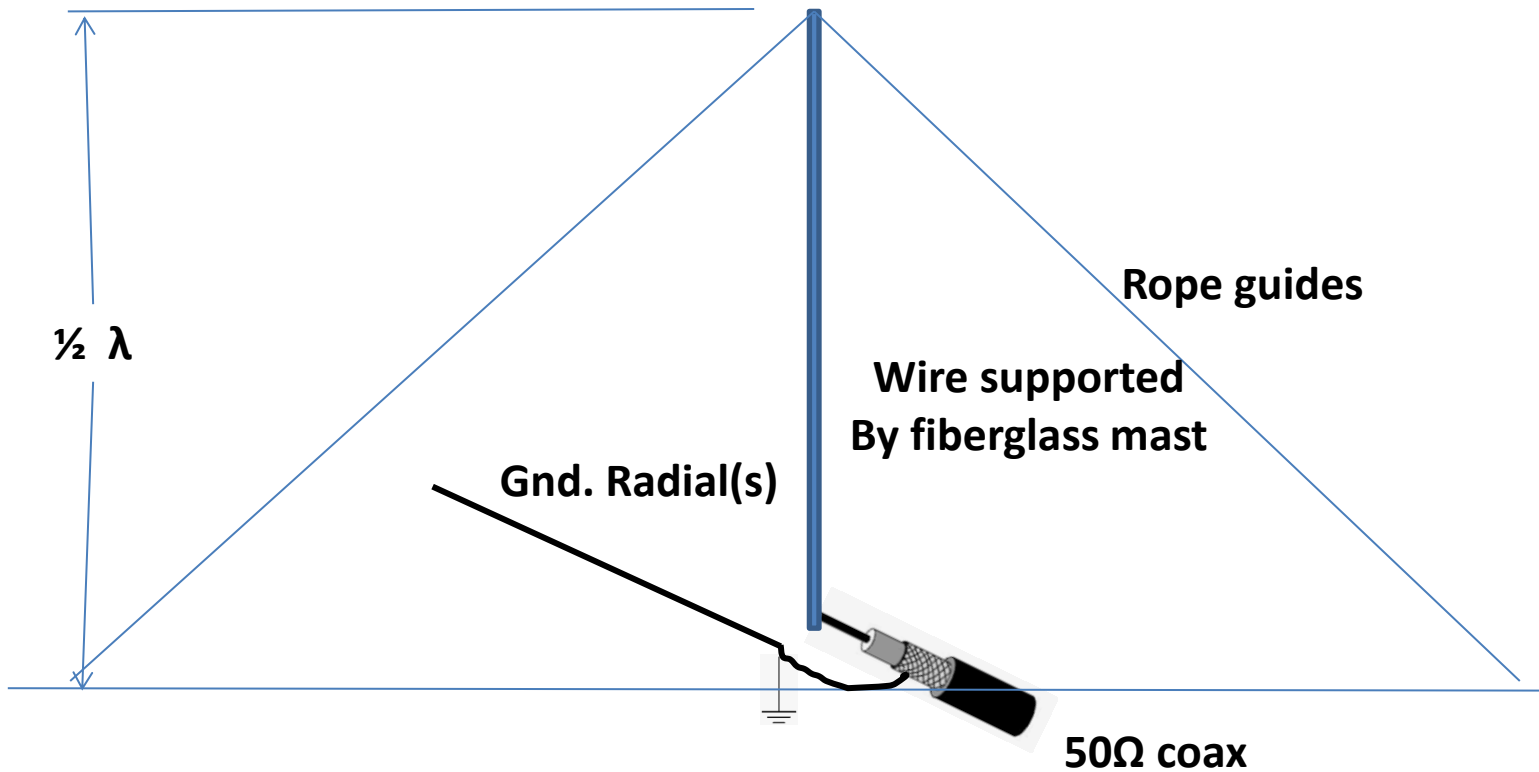
# **EXAMPLES OF RESONANT HF ANTENNAS**

**Note: A MFJ-259B SWR Analyzer will be available to tune antenna**

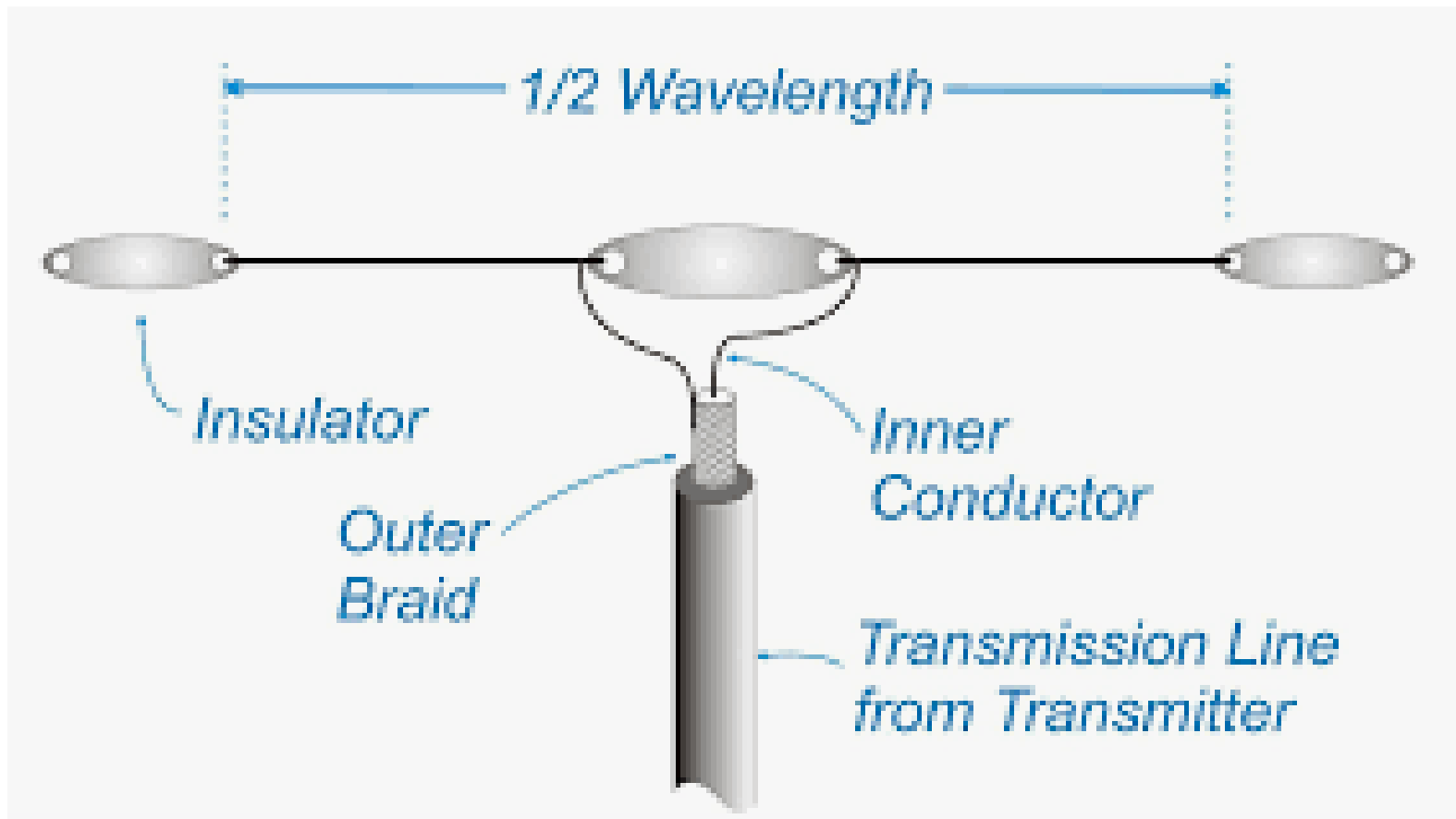
# HF Vertical Antenna (resonant at multiples of $\frac{1}{2} \lambda$ )



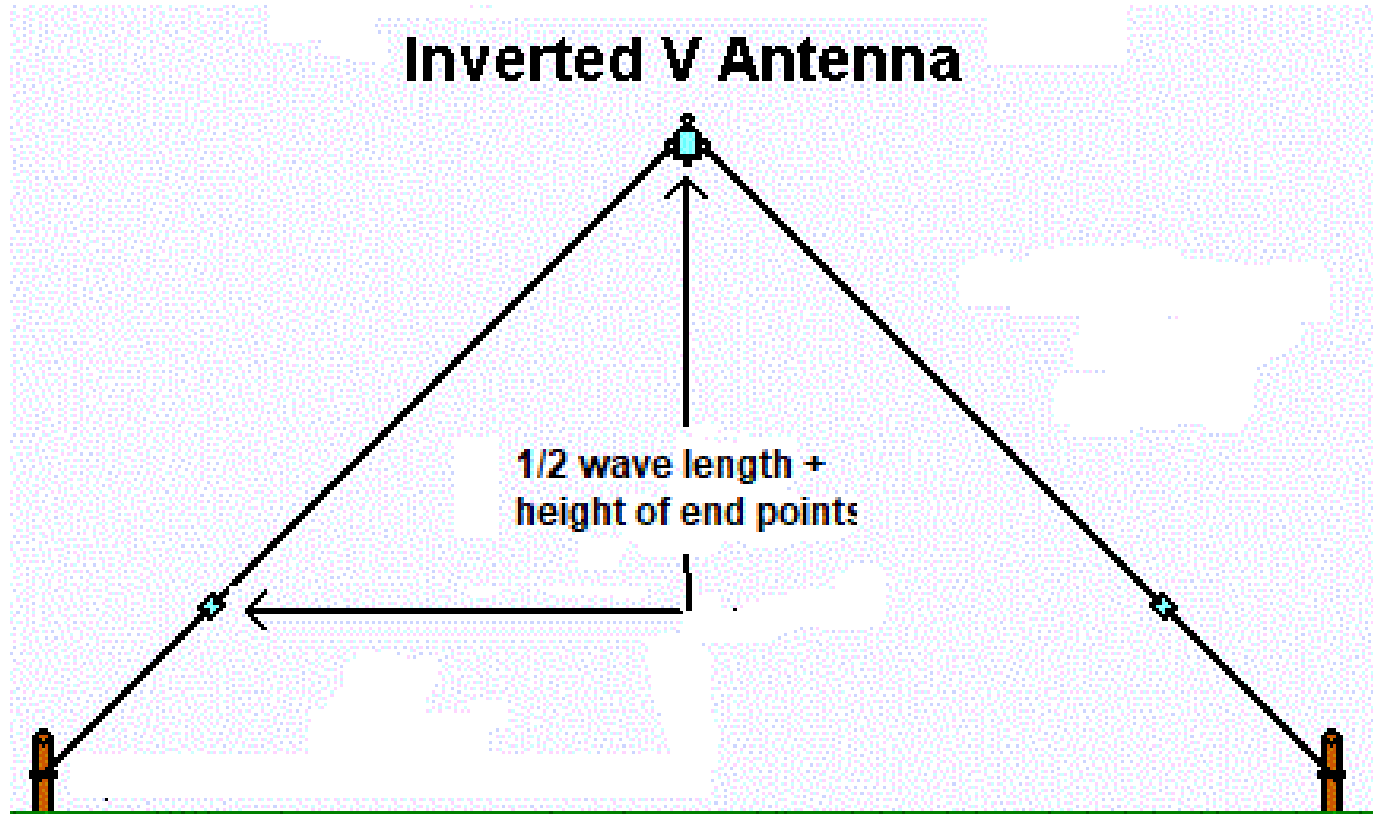
# HF Vertical Antenna (Wire) (resonant at multiples of $\frac{1}{2} \lambda$ ) (i.e. 34 ft. – 20m and 10m)



# Horizontal Dipole



# Inverted-V Dipole



# End-Fed Half-Wave Antenna Kit



## END-FED HALF-WAVE ANTENNA KIT

ARRL has partnered with HF Kits to bring you this easy-to-build antenna kit: an end-fed half-wave (EFHW) antenna. We built it in the ARRL Lab, set it up outside, trimmed the wire for the lowest SWR, and got it on the air. Now it's your turn!



List Price: \$79.95

Quantity:

Save For Later

Add To Cart

### ITEM DETAILS:

#### Get On the Air with an End-Fed Half-Wave Antenna!

The advantage of an EFHW is the ease of construction, it's versatility in a variety of installation configurations (sloping, horizontal, L, etc.), no tuner is needed, and this one works on 4 bands: 10, 15, 20, and 40 meters. We chose a 250-watt...

# Conclusions

- AARC will be conducting a Field Expedient HF Antenna contest during the ARRL 2026 field Day event. Prizes will be awarded for most contacts.
- Contestants are encouraged to contact me immediately with questions or comments. I can provide modeling of your proposed field expedient antenna or past presentation documents.
- The quantity of prizes will be based on the number of participants. First, Second, etc.

# QUESTIONS?

Lewis Thompson

[W5IFQ@att.net](mailto:W5IFQ@att.net)

512-587-9944