Dipole calculator

Half-wave dipole length by frequency. The 468/f formula with velocity factor adjustment.

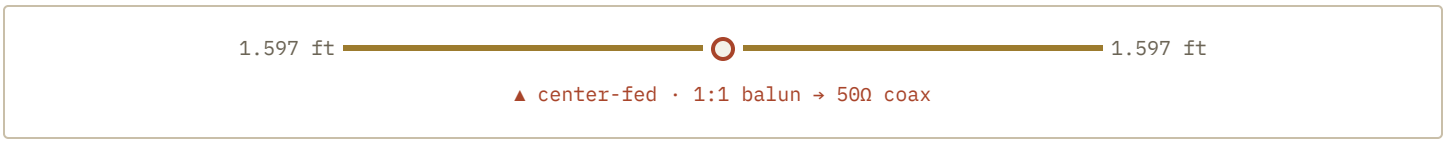
FREQUENCY

146.52 MHz

VELOCITY FACTOR

1.0

1.0 for bare wire (end effect is already in the 468 formula); ~0.95-0.97 for insulated wire



Total length	**3.194** ft / **0.974** m
Each leg	**1.597** ft / **0.487** m
Wavelength	**2.046** m
Cut each leg to	**1.645** ft / **0.501** m

> Cut each leg to 1.645 ft (50.14 cm). That's 0.6 inches (1 mm) of trim room. Check SWR, then trim 1/4 inch from each end at a time until SWR dips at your target frequency. At this size you can use stiff copper wire or aluminum rod instead of flexible wire. 2m band (FCC Technician).

How this works

The standard dipole formula is 468 divided by the frequency in MHz, giving total length in feet. The 468 constant accounts for the ~5% shortening effect from a wire's finite diameter and end capacitance compared to a theoretical infinitely thin conductor in free space.

The velocity factor adjustment handles insulated wire, which is electrically shorter than bare wire at the same physical length. Bare copper wire has a velocity factor around 0.95. Standard PVC-insulated hookup wire is closer to 0.93. If you're using speaker wire or zip cord for a quick antenna, use 0.92 and expect to trim.

What this doesn't do

This gives you a starting length. Real antennas need trimming with an analyzer or by cutting long and checking SWR. Height above ground, nearby metal, soil conductivity, and feed line interaction all shift the resonant point. Cut 2-3% long and trim to match.