

# Calculating Exact Element Lengths

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Compute wavelength:  $\lambda(m) = 300 / f(\text{MHz})$ .

Start with half-wave length:  $L_0 = \lambda / 2$ .

Apply velocity factor (VF) and end effect:  $L = L_0 * VF * K$ .

Typical K ranges 0.95 to 0.98 depending on diameter and height.

For long wires, choose  $L = n * (\lambda/2)$  and adjust per model.

Use modeling to refine length for the desired resonance or pattern.

Trim in small steps and re-measure SWR to final value.