Design Calculations for Long Wire Antenna

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Define target band(s) and choose a practical wire length.
Start length Lm = 150 / f(MHz) meters for half-wave estimate.
Apply velocity factor: L = Lm * VF (typical VF 0.95 for bare wire).
For long wire, pick L = n * (lambda / 2) where n >= 1.
Estimate feed impedance with modeling or tables for L/lambda.
Choose feed method: end-fed with transformer or balanced line.
Select matching: 9:1 unun for random wire, 49:1 for EFHW.
Check current maxima to avoid feeding at a current null.
Estimate required counterpoise length ~0.05 to 0.25 lambda.
Verify mechanical sag and tension for the chosen span.