

Antenna Length Calculator

Choosing the correct length is important to get the maximum performance from a radio transceiver and prevent possible damage from reflected power through mismatched lengths for a given frequency.

This little trinket calculates Full, Half and Quarter wave lengths.

I am not a "radio person" - I have almost zero experience with radio design & use beyond small data modules with short ranges (<2Km) but this gives the required lengths. Best is to cut the antenna a bit longer than you need then trim it to the precise length once it is fixed in place if you can. The antenna should be as long as you can get away with i.e. Full is better than Half, but generally for short range stuff a Quarter wave will often be just fine. It should also be as high and vertical as you can make it - these requirements that have worked well for me - your mileage may vary. You can coil the antenna up (e.g. round a pencil or screwdriver shaft) if space is limited but I have always found a corresponding drop in performance. See what works best for you.

$$\lambda = \frac{C}{\text{Freq}}$$

(in Metres) (speed of light in m/s) (in Hz)

I used MMBasic to write the prog but it is simple enough to transcribe into just about any language. It isn't rocket-science but it takes the grunt out of one more chore.

The Code

```
Dim Float L,F
Dim y$
Print "*****"
Print "* Antenna length calculator *"
Print "*****"

Const C=299792458' speed of light in m/s

Input "Enter Frequency in Hz: ",F
L=(C/F)*1000
Print:Print "Antenna Lengths"
Print "-----"
Print "Full Wave      = ";L;"mm"
Print "Half Wave      = ";L/2;"mm"
Print "Quarter Wave = ";L/4;"mm"
```

example:

```
> RUN
```

Enter Frequency in Hz: 433000000

Antenna Lengths

Full Wave = 692.361mm
Half Wave = 346.181mm
Quarter Wave = 173.09mm
>\\

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