

# MONWK

AMATEUR RADIO BLOG BY ADRIAN LEGGETT - NEWARK - ENGLAND

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☰ MENU

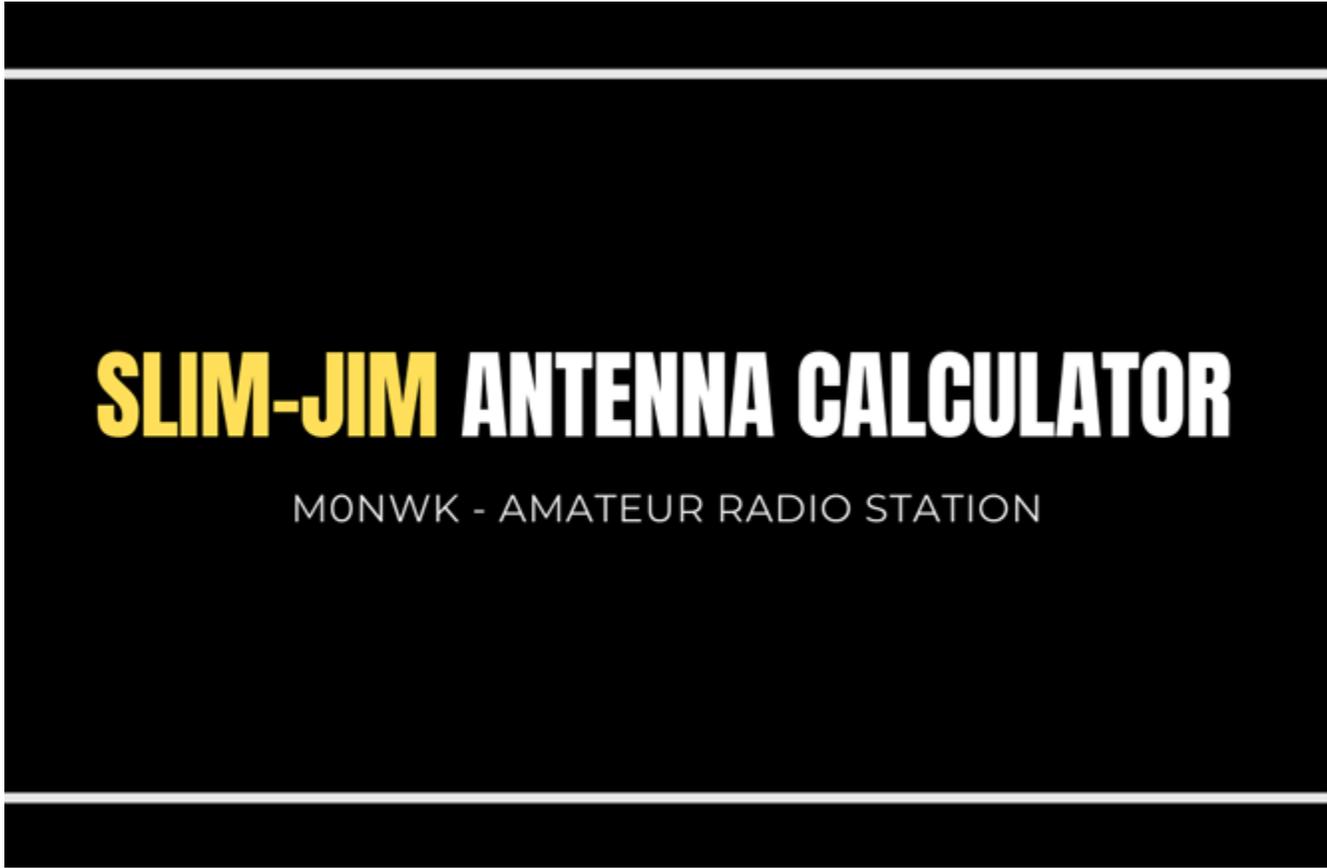


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ANTENNAS , CALCULATORS

## SLIM-JIM ANTENNA CALCULATOR

OCTOBER 23, 2020 [NO COMMENTS](#)



# SLIM-JIM ANTENNA CALCULATOR

MONWK - AMATEUR RADIO STATION

I have just finished my Slim Jim antenna calculator and will be using it to build a Slim Jim in my workshop. Photo's and video coming soon.

Click on the continue button to see more.

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Input frequency and velocity factor before clicking the calculate button.

Frequency (MHz)*	146	
Velocity factor*	0.95	

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Results:

Wavelength (m)	2.05
Actual wavelength (m)	1.95
#1 - Overall length (cm)	146.40
#2 - 1/2 wave radiator section (cm)	96.58
#3 - 1/4 wave matching section (cm)	47.77
#4 - 50 ohm feed point (cm)	4.88
#5 - Gap (cm)	2.05
#6 - Spacing (cm)	4.47

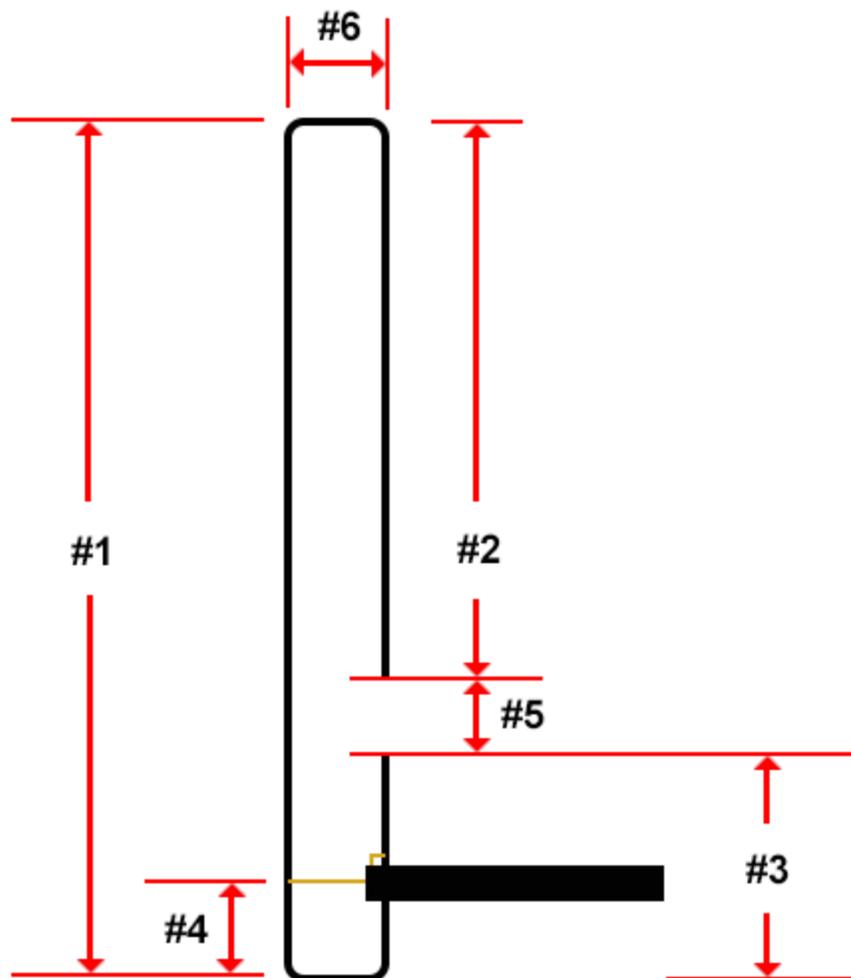
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Total radiator length (cm)	297.64
Total radiator length (m)	2.98

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### **Antenna design**

See below the J-Pole antenna design.



### Calculator explained

**Frequency (MHz):** Input the frequency for calculations

**Velocity factor:** The conductive material user for the antenna's radiating element will affect how well RF propagates through it and certain materials can slow the RF.

Speed of light is used to determine the speed at which radio waves are travelling in free space. Conductors such as copper, aluminium and steel will slow RF down. Velocity factor (VF) needs to be taken into account when calculating your antenna.

A common conductor used in antenna construction is copper. Copper slows RF by around 5% so the VF will be 0.95 (95% speed of light).

This calculator uses 0.95 as default but this can be changed depending on what material you will be using to make your radiator.

Inputs

**Actual wavelength (m):**  $(300 * \text{velocity factor}) / \text{frequency in MHz}$

**#1 – Overall length(cm):**  $(22500 * \text{velocity factor}) / \text{frequency in MHz}$

In calculation #2 I have deducted 1/2 the length of the calculated gap (#5)

**#2 – 1/2 wave radiator section (cm):**  $(30000 * (0.5 * \text{velocity factor} / \text{frequency in MHz})) - ((300/\text{frequency in MHz})/2)$

In calculation #3 I have deducted 1/2 the length of the calculated gap (#5)

**#3 – 1/4 wave radiator section (cm):**  $(30000 * (0.25 * \text{velocity factor}) / \text{frequency in MHz}) - ((300/\text{frequency in MHz})/2)$

**#4 – 50 ohm feed point (cm):**  $(30000 * (0.025 * \text{velocity factor})) / \text{frequency in MHz}$

**#5 – Gap (cm):**  $300 / \text{frequency in MHz}$

**#6 – Spacing (cm):**  $(30000 * 0.02175) / \text{frequency in MHz}$

Note: #2 + #3 + #5 = #1

**Total radiator length (cm / m) =**  $((\#1 + \#2 + \#3) + (\#6 * 2)) - \#5$

Why not take a look at my YouTube channel [here](#) or Twitter posts [here](#).

You can also register for my website [here](#).

Thanks

73 de M0NWK



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Adrian Leggett

Adrian Leggett

Ex-Royal Navy radio operator and amateur radio enthusiast. I've been interested in radio since I was 13 years old. I mainly operate HF on 20 and 40 meters.