



END FED ANTENNA EF10-80 100W

USER MANUAL

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Please, carefully read this assembly manual before starting to assemble the antenna.

Thank you for purchasing a WiMo antenna! This manual will guide you to the correct assembly and mounting of your new antenna. WiMo designs are based on the latest versions of computerized simulations and confirmed by field tests. WiMo antennas are very easy to assemble thanks to the grouping and labeling of components. Please be considerate your environment by disposing of all waste in proper, climate safe locations, if you can, recycle the packaging.

WiMo Limited Warranty and Liability

WiMo warrants to the original purchaser that this product will be free from defects in material and workmanship for a period of two (2) years from the date of purchase. WiMo will solely determine whether a part will be covered by this limited warranty and whether a part will be repaired or replaced. Such determination will be made following the evaluation of alleged defect. WiMo will evaluate if misuse, abuse, unauthorized modifications, extreme weather conditions or improper installation occurred. This warranty does not cover delivery, transportation, installation or any other cost that may be incurred from any defect. Shipping costs for any repairs, replacements or returns will be paid by the buyer and must be prepaid. Before proceeding with the evaluation, WiMo will have to receive appropriate documentation that helps identify any defect. The purchaser, final customer, installer and user of WiMo products acknowledge that these products can cause injury or death and accept full responsibility and liability for any and all damage to persons and to property (direct, indirect and punitive) caused during installation and subsequent use.

Warning

Do not install this antenna where there is any possibility that the antenna or any part of the supporting structure could come in contact with power lines or any electric circuit. If the antenna comes in contact with electric circuits, this could result in electric shock or loss of life. Also ensure that no people or pets can come in any contact with the antenna after it is installed. Dangerous voltages can exist on the antenna when it is in operation and no part of the system is insulated to prevent electric shock. WiMo antennas are not designed to be used as support structures. Persons or objects should never be supported by or suspended from the antenna structure. It must be taken into account that falling parts may cause a hazard to people, animals and property on the ground below.

Disputes For any dispute, only the Germany headquarters is your point of contact and has the final authority.

WiMo antennas are designed and manufactured in Germany

Contact If you have any questions regarding the assembly or operation of this antenna, please contact WiMo: info@wimo.com

NOTE: Reference to Standard American English (SAE) or Imperial units are approximate where noted.

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HOW IT WORKS

In the past the “end fed” antenna was very popular among radio amateurs.

One of the first examples was the Zepp antenna which was originally used on Zeppelin airships during the First World War!

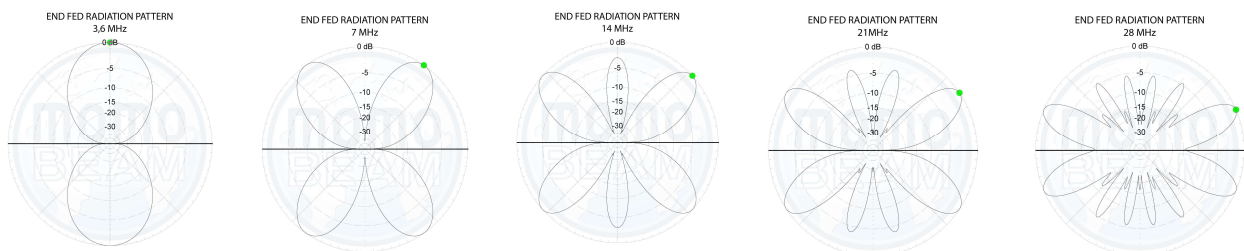
The main characteristic of the End Fed type antenna, as the name suggests, is that it is fed at one end, a point where the impedance is very high (around 2500/5000 Ohm). The main advantage of these antennas is that by using a long half-wave radiator, it will also have a high feed point impedance at higher harmonic frequencies therefore by using an appropriate impedance transformer, our antenna will be able to operate on multiple bands with a acceptable mismatch.

The main components of our “end fed” are the radiating element composed of coated copper core wire and a wide-band impedance transformer with a ratio of 49:1 which has the purpose of converting the impedance of the feed point raised to a value closer to 50 ohms.

THE RADIATION PATTERN

When used as a half-wave radiator, it will behave in the same way as a half-wave dipole with the familiar figure of eight, radiating at a maximum of ninety degrees to the wire axis.

As the length increases, the radiation pattern changes with the formation of additional lobes and the maximum radiation points moving away from being at right angles to the wire axis and towards alignment with the wire axis.



PRODUCT SPECIFICATIONS

MODEL	EF1080-100
FREQUENCY	3,6/7/14/21/28 MHz
Max. length	23m / 75.5ft
Max. applicable power	100 Watt (ICAS) 20 watt for digital modes
Connector	SO-239
SWR	bandwidth 2:1
Weight	0,7 kg

The 'End Fed' comes pre-assembled and ready to use.

MATERIALS USED

All hardware is made of stainless steel.

The radiating element is made of sheathed ultraviolet-resistant copper wire.

Considering that the length of the radiating element can be strongly influenced by external factors such as distance from the ground, presence of metal elements in the vicinity, etc., the copper wire supplied is longer than expected and its length must be adjusted during installation.

Tip: do not cut off any excess wire, but fold it over by twisting it around the radiating element and make sure that it sticks to it.

IMPORTANT NOTE ON APPLICABLE POWER

Applicable power refers to the ICAS (Intermittent Commercial and Amateur Standard) classification. Intermittent operation implies that no operating or switch-on period exceeds 3 minutes and that each switch-on period is followed by a switch-off or standby period of at least equal or longer duration.

IMPORTANT

Digital modes such as FT8 are very stressful for the antenna and prolonged use can irreparably damage the impedance transformer! It is essential to limit the transmission power to 20% of the declared power.

FEEDLINE

Connect the antenna to the RTX with a 50 ohm coaxial cable.

USE OF A LINE ISOLATOR

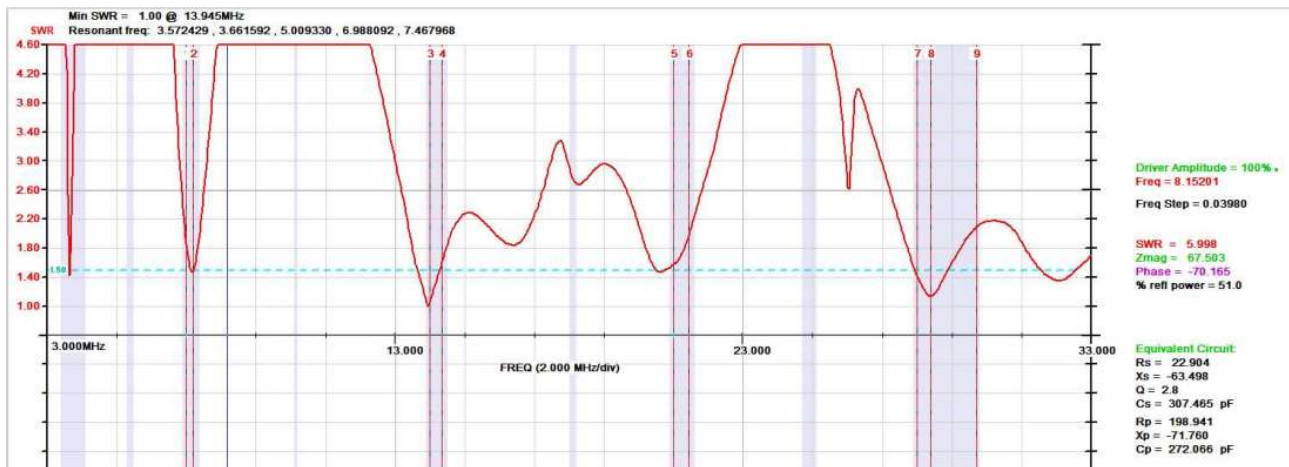
Although not necessary, we recommend adding a **line isolator** (not supplied) to prevent "common mode currents" from flowing back to the radio along the outside of the coaxial cable shield.

We strongly discourage placing the RF Choke below the feed point as this would negate the effect of the coaxial cable which, in the vicinity of the 49:1 transformer, becomes an unwanted but necessary part of the antenna's proper operation.

The correct distance where to position the RF Choke is between 0.05 and 0.3 lambda. Obviously, it will not always be possible to position the RF Choke at the correct distance, but don't worry, even placing it at the end of the coaxial cable, close to our transmitter, the benefits will be considerable and will prevent unwanted signals (mains, inverter, PLC etc.) from reaching our receiver.

SWR

By correctly installing the antenna at a height of no less than 10 metres and free of obstacles, we will achieve excellent impedance matching on all bands (better than 2:1). In some situations it may be necessary to adjust the impedance to improve SWR. (your radio's internal tuner or an external tuner will help).



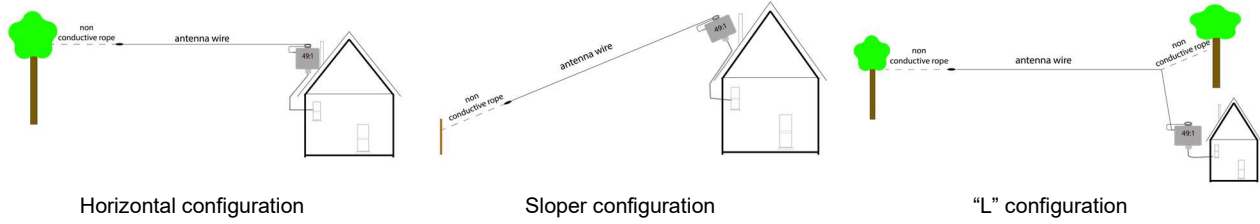
CHOICE OF INSTALLATION LOCATION

We recommend installing the antenna in an unobstructed location, away from power lines and as high up as possible.

The 'end fed' is very versatile and can be installed in various configurations. Below we describe typical installations, but nobody will prevent you from trying others.

IMPORTANT

The box containing the 49:1 transformer has a very high degree of protection against water ingress, but condensation can sometimes form inside the box. The box is provided with two holes adjacent to the connector, which will be used to drain off any condensation. Make sure that these holes are unobstructed and always point downwards.



CALIBRATION OF THE END FED

Since the operation of the dipole can be influenced by its surroundings, it may be necessary to carry out calibration at the place where it will be installed.

For this purpose, it is recommended to equip the anchor points with pulleys, so that the antenna can be effortlessly lowered to make the necessary adjustments.

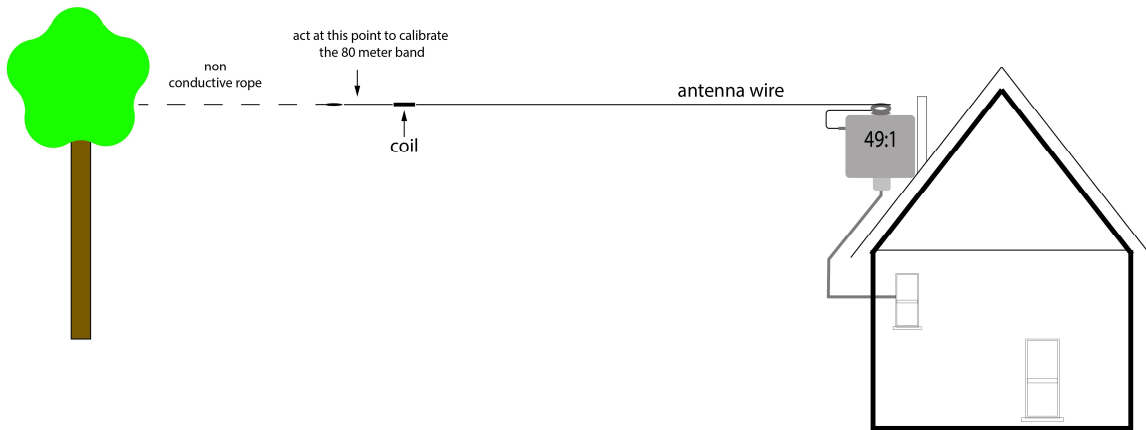
The antenna wire is supplied longer than expected. In the event that you need to recalibrate the antenna; this abundance will allow you to do so.

In the case of low SWR out of band, it will be possible to intervene by modify the length of the antenna:

-80 meter calibration

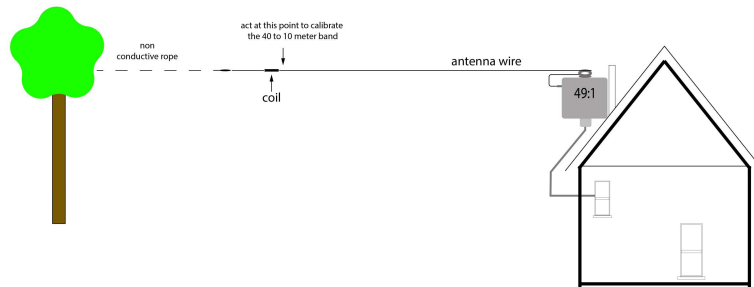
Act at the end of the antenna by lengthening or shortening the antenna length, taking into account that: Shorten to increase the frequency and lengthen to lower the frequency.

Please do not cut the excess wire but fold it back on itself and twist it.

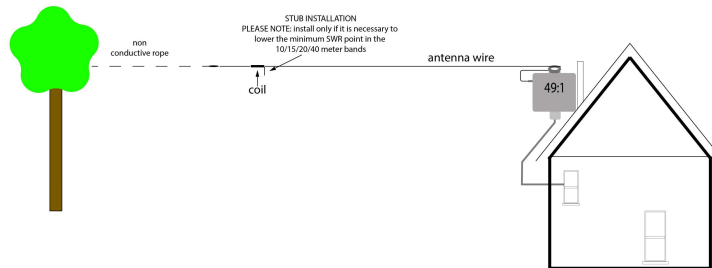


- 10/15/20/40 meter calibration
To calibrate these bands proceed as follows:

If it is necessary to raise the resonance frequency then it will be necessary to shorten the length of the antenna section that goes from the 49:1 transformer to the coil by folding the wire on itself and fixing it effectively (see figure below). We recommend using sturdy plastic ties or better yet a metal clamp which is not supplied.



If you want to lower the operating frequency, install the supplied stub (see figure below) and adjust the length until you obtain the minimum SWR in the desired frequencies.



Please note: by varying the length of the wire located after the coil (short wire) you will influence the SWR of the 80 meters (3.6 MHz)

By varying the length of the wire located between the 49:1 transformer and the coil (long wire) you will influence the SWR of the 40 to 10 meter bands (7/14/21/28 MHz)

A variation of 10 cm in length corresponds to approximately:

- 3.6 MHz - 50 KHz.
- 7 MHz - 100 KHz.
- 14 MHz - 150 KHz.
- 21 MHz - 200 KHz.
- 28 MHz - 300 KHz.

SAFETY NOTE

Do not touch the antenna terminal or antenna ends during transmission.

When transmitting with 100 watts of power, very high voltages will be present in the antenna ends, which can exceed 500 volts and can cause injury or death. Do not make contact with the antenna for any reason and ensure that they are out of reach of anyone.

TROUBLESHOOT

High SWR even off frequency - the antenna was installed too low or close to metal objects

The antenna does not receive and has high SWR - Stop transmitting immediately and check the integrity of the antenna and the connected coaxial cable. If there are any switches connected, unplug them and try connecting the antenna directly.

If you notice sudden changes in SWR during transmission, it is a sign that the toroidal core inside the box has received more power than it could handle and has overheated (its permeability has changed and created a serious malfunction). In this case, stop the transmission immediately and allow the toroidal core to cool down.

In most cases, when the core cools down, normal operation will be restored, but in extreme cases excessive and repeated overheating may permanently alter its permeability and render it unusable.