

Cantenna Building Instructions

Note: These instructions are for a 802.11b/g (2.4 GHz) Cantenna. No warranty! Mismatched antennas may damage your wireless devices. You are responsible for keeping the wireless system within legal limits in your legislation. 2005 09 18 sebastian büttrich / sebastian@wire.less.dk



Here's how to build your own:

What you will need:

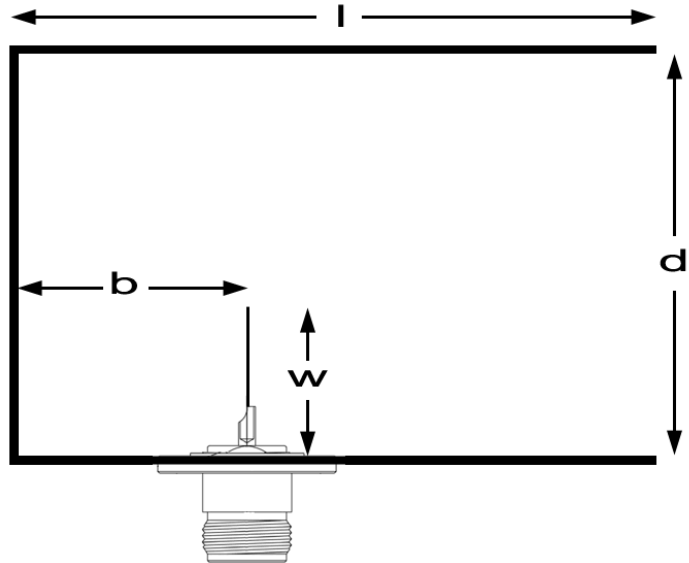
- **A can**, with a diameter of circa 82 - 83 mm. Larger ones up to 100 mm will also work.
Cans that contain liquids are preferable – they last longer under the weather.
Cans of Pineapples, Peaches, Olive Oil, Espresso have been used with great results. The length/height of the can is secondary, but it should be > 100 mm. The longer, the stronger and more directional your Cantenna will be.
- **N type female RF connector** (one central hole or 4 screw type) & suitable screws & nuts (typically M3 machine screws).
- **Copper wire** ($A = 2 - 3 \text{ mm}^2$), 40 mm. Normal electric installation wire works well, and if nothing else can be found, a straightened paper clip will do.
- **Tools**
While it is possible to build a can without any tools, the following tools are nice to have:
Drilling machine, with drill heads for wood and metal (3mm – 12 mm), soldering iron and lead, screwdriver, standard pliers and cutters, a pen & something to measure with.

Build it

1. Empty and clean the can. Be careful not to cut yourself.
2. Measure the diameter precisely. The diameter determines the distance between the wire piece and the bottom of the antenna. The precise formula may be found here:

http://wire.less.dk/static/cantennahowto_metric.html – and here are some guide values:

d diameter	b (distance from bottom)
80	70.1
81	67.5
82	64.5
82.5	63.3
83	62.1
84	59.9
85	58.1
90	51.4
95	47.2
100	44.4



3. Mark and drill a small hole at the right position. Putting a piece of wood into the can can help stabilize it as you drill. Extend the hole step by step to the right size for the N connector to fit through.
4. Mark and drill the holes for the screws, if you are using a 4 screw type connector.
5. Take a piece of wire of circa 35 mm and solder it into the N connector. Make sure it is straight.
6. Fit the connector into the can, fasten tightly.
7. Measure the length of the wire, starting from the cans inner surface. Trim it to be $w = 31.5$ mm. Use a piece of paper or cardboard which you cut to be 31.5 mm wide as reference.
8. You are done. If you like, paint your can in beautiful colors.

From here on:

You will need a pigtail (the cable between an antenna and a radio card or access point) to connect your Cantenna.

Test the antenna by measuring signals with and without antenna, using a reference radio card or access point and a program like Netstumbler or Kismet.