

## **80 m shortened Dipole project**

Because of my limited space I had to think about an antenna that is small enough for my yard without having too much loss in gain and I found such an antenna in the antenna collection of Rothammel "Antennenbuch-Rothammel".

The WX was fairly good enough in early March and so I decided to give it a try. This antenna just requires about 24m of free space instead of 41m that a normal half wave 80m antenna needs to hang up. The so called "loaded" dipole uses a coil in every dipole arm to electrically lengthen the mechanical too short dipole arms.

Every coil has an inductivity of 120 microHenry.

The exact inductivity should be finally tested with an instrument but I haven't got any so I built the coils like the calculation said.

You can get about 120 microHenry if you put 90 turns of 1mm insulated Copperwire closely together over a length of 90mm. As body for the coils I used plastic tubes with a diameter of 40mm. If you use other diameter than this you must recalculate the number of turns.

With these measurements I got an SWR at its best on 3.600 MHz 1:1,4. Loaded dipoles have a small bandwidth, so I checked an SWR up to 1:2 in a 50 KHz range. Out of that range the SWR gets higher rapidly, so to use this antenna on the full 80m band it is necessary to have a tuner connected.

This tuner is also needed in rain periods, when coils are getting wet, the resonant frequency changes quite a lot.

I feed this dipole with coax cable....no transformer in centre and I am very satisfied with that small antenna. Recently I worked Gibraltar at 100 Watts QRP, hi.

My antenna is about 8m over the ground slightly "inverted V".

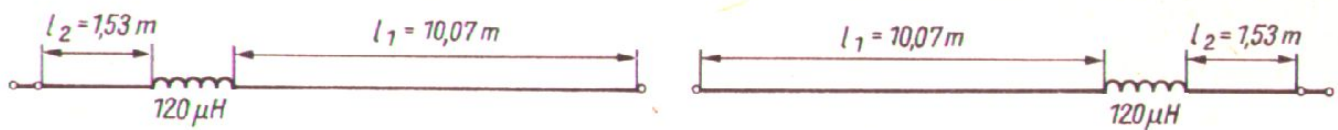
Look for good insulators on the end of the dipole legs as there will be high voltage!

**Summary what you need:**

$l_1 = 10,07\text{m}$  (2x) antenna wire  
 $l_2 = 1,53\text{m}$  (2x) antenna wire

2 Coils: 120 microH each  
90 turns of 1mm wire on a 40mm tube (approximately 2x 11,6m of copper enameled wire)

**schematic of the dipole**



I have been using this antenna for some month now and sometimes people are astonished about the good signal even when I operate QRP.