

# Shortened Antenna for the 160- meter Band

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Credit Line: <http://www.cqham.ru/>

At my QTH I had no space for full sized dipole antenna for the 160- meter. So what I may install there it was only a shortened antenna. After dig out in the internet and books and tried out different antennas at my location I found the antenna that works for me.

The antenna was made in 2008. Several years in the Air on the 160- meter Band with the antenna and 15- watts TX gave good reference for the antenna. **Figure 1** shows the Shortened Antenna.

**Design of the antenna:** It is symmetrical antenna. However it is possible to make asymmetrical one. Antenna may be installed in line similar to usual dipole antenna or may be installed similar to I.V. antenna.



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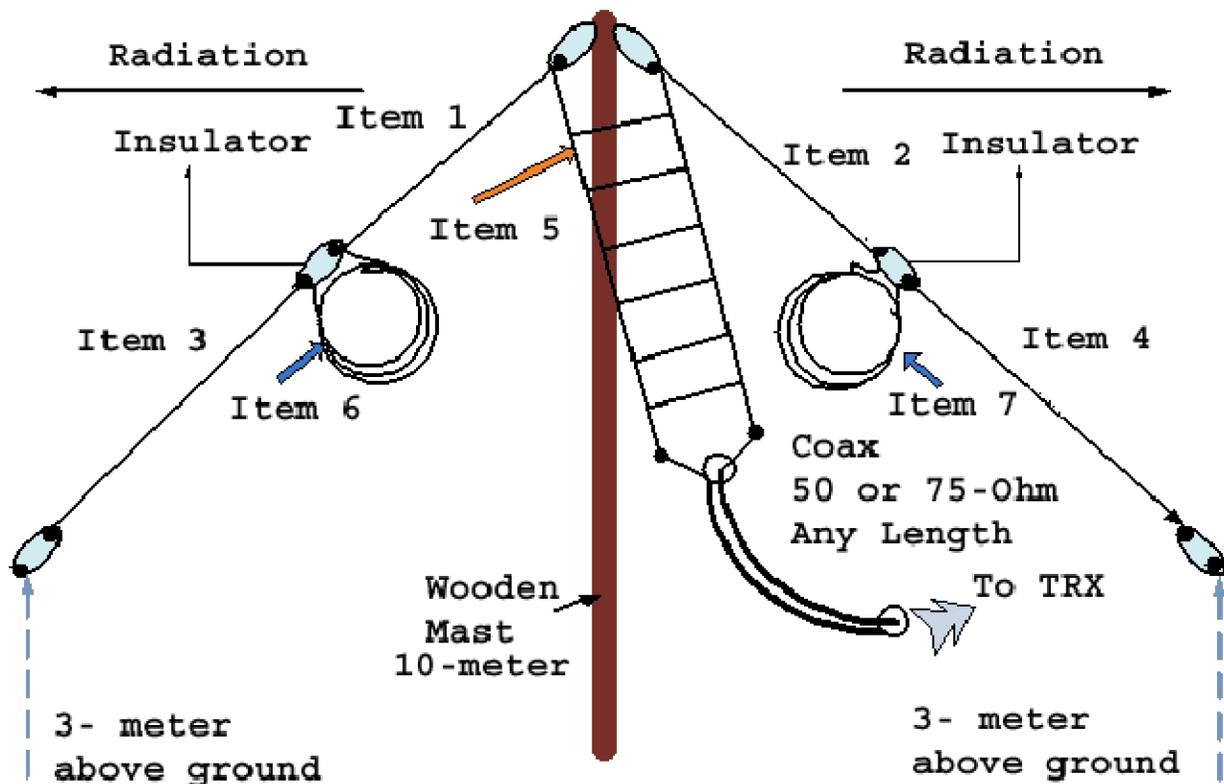
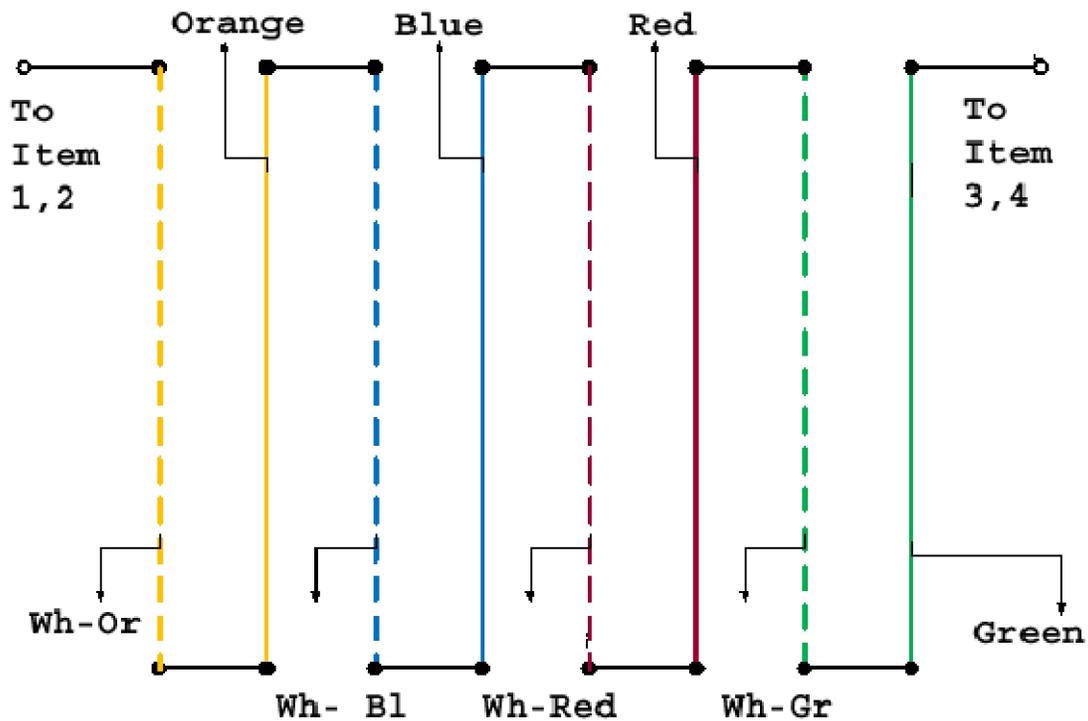


Figure 1 Shortened Antenna for the 160- meter Band

RA3ARN installed the antenna similar to I.V. antenna. It was used 10-meter wooden mast for the antenna. Lower ends of the antenna were at 3- meters above the ground. Antenna has two wires *item 1* and *item 2* with constant length 11- meter each. Length of the wires *item 3* and *item 4* may vary from 18 to 15- meters when antenna is tuned up. Antenna is matched with a coaxial cable with help of a length of a two wire open line – *item 5*. It is 450- Ohm open line in length 12.5- meters. Coaxial cable 50 or 75- Ohm may be used to feed the antenna.

Antenna is lengthened with help of coils *item 6* and *item 7*. The coils made from length of an Ethernet Cable, 17 meter each. RA3ARN used Ethernet Cable with mark on it: NEXANS UTP KATEGROY 5E TIA 568-5EC VERIFIED №11168 4PR 24AWG SU3505. Almost any 4- pair Ethernet Cable may be used for the coils. **Figure 2** shows diagram of the coil. All twisted pairs are connected in serial. Then the cable was coiled in a hank of 40- cm diameter. Soldered ends were protected from weather conditions with help of a thermo- shrink tube.



**Figure 2** Diagram of the lengthen coil.

Overall length of the half of the dipole antenna is 164 meters. Overall length of the all dipole antenna is 328 meters. Antenna had SWR 1.08 at 160 meters. Second resonance was at 20 meters with SWR 1.5 within 40- kHz. Antenna may be tuned to another amateur's bands with help of a simple ATU.

Antenna worked fine for several years. It was used 15- Wtts at the 160- meter and 800- Wtts at the 80-40- and 20- meter Bands. Used the method of the shortening it is possible to remake almost any wire antenna. For example, existing I.V. for the 80- meter may be easy turned on to a multi- band antenna.

**73! RA3ARN**

