

A FIVE BANDS VERTICAL TRAP ANTENNA

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The classical **W3DZZ** antenna in vertical installation designed by UL7GCC and shown at the **Reference 1** is well known in Russia. **Figure 1** shows the antenna. Diameter of sections A and B is 40- 50-mm. How is it work?

40-m band: The trap LC cut out the upper section B from the antenna. So only section A works as a radiator, and the section A has length in 10.1 meters, i.e. has electrical length in $1/4\lambda$. Vertical radiator having with the length of $1/4\lambda$ has a quarter- wave resonance and works in very effectively way. At the band the circuit LC works as a **trap**.

80-m band: On the 80-m band the antenna has summary physical length of this two sections A+B a little less than $1/4\lambda$. $A + B = 16.47$ meters, less then 20 meters OF quarter wave length for the 80-m band. A short vertical radiator has a capacity part in its input

impedance. But the circuit LC at the 80-m range has an inductance part in its impedance. The inductance part compensates capacity part of the electrically short vertical, and the antenna has a low SWR at the 80-m range too. In other words, the inductor of the LC works as a usual lengthening spool.

10-, 15- and 20-m ranges: Visa versa, at the 10-, 15-, and 20-m the LC has a capacity part at its impedance that goes the electrical length of the antenna to 1.75λ at 10-m, to 1.25λ at 15-m and to 0.75λ at 20-m.

Do not forget, verticals like counterpoises, so use several $1/4\lambda$ counterpoises for each bands.

Reference

M. Chirkov, UL7GCC: Multi range vertical // Radio #12, 1991, p. 21.

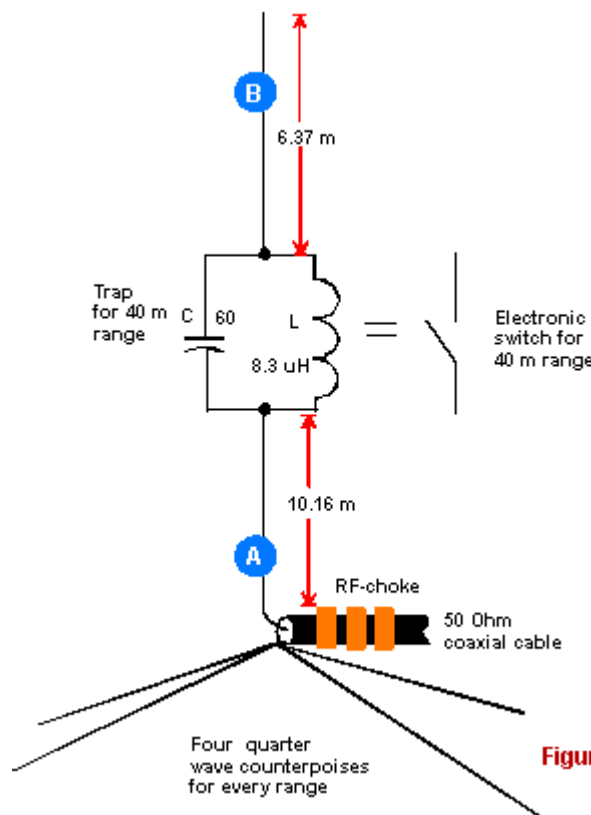


Figure 1

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