A HELICAL LOPP ANTENNA FOR THE 20 METERS BAND

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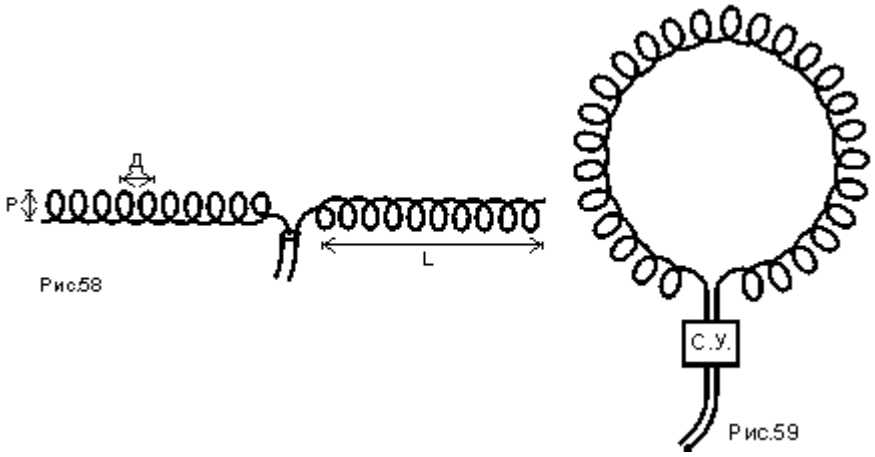
Two years back I have moved to Nefteyugansk (Russia, Siberia) where I could not receive the sanction to installation for a full-sized HF- antenna on the roof of my house. , So I began to do experimenters with short indoors antennas. Most success design of my indoor antenna is a design similar to ***Fig. 59****, given in* ***Reference 1****.*

I have used an inch OD plastic pipe to the form of the antennal. The pipe was bent in a hoop near1 meter diameter. Antenna has 580 turns (near 61 meters of length) of multicore isolated wire of 3 mm diameter with thickness of isolation of 1 mm. So, the spacing between turns is 2 mm. Antenna has SWR 1:1 to 50-Ohm coaxial cable to 14.100, bandwidth to SWR 1:1.5 is 300-kHz. I use a simple symmetrical device- 3 turns on a TV yoke ferrite core. Space from the antenna to the ceil is near 25 centimeters.

The antenna has quite good directed properties at rotation within 30-90 degrees the force of signals varied to 1-1,5 points on mine S-meter. I use a YAESU FT840 for my work in the ether. Change of polarization (at rotation of the antenna on the vertical side) appreciable changes has not given as well as change of feeding points has not given large change in the force of signals.

Helical Loop Antenna

Figure 58 & 59 from Reference 1



In the last summer I experimented and hung up of the antenna behind my balcony at 1.5 meters from a wall. I have received a significant improvement of the work of the antenna The antenna does very good operation in the ether, better than others indoors antennas. It gives low industrial noise and kills all TVI.

Reference:
I. Grigorov. Antennas for radio amateurs. - Majkop, 1998.

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Top Load at Vertical Antennas

All amateurs know if at a vertical antenna a top load it is used, the self –resonance of the vertical antenna would be lower then a vertical without the top load. How a top load does influence to antenna resonance?

At **Reference 1** I found a very interesting table having the data. I have proved the table with **MMANA**, all okey, the table gives very reliable data, so it is possible to use it at many situations. Figure 1 shows different top loads. Data for loaded effect for the top load is shown in Table 1 given at **Reference 1**. K is coefficient: K = W/L, where W is a resonance wavelength for the vertical antenna, L is antenna length from the ground to the top load.

As it is seen, the “umbrella” top load (**Figure 1e**) gives the most effect on the resonance of a vertical antenna. For example, if to use an umbrella load for a vertical antenna in five meters height, the antenna quarter wave fundamental resonance wavelength would be changed from 20 to 50 meters!

Reference:

1. Polyakov V. Technique of radio: Simple AM receivers. – Moscow, DMK-Press, 2001.

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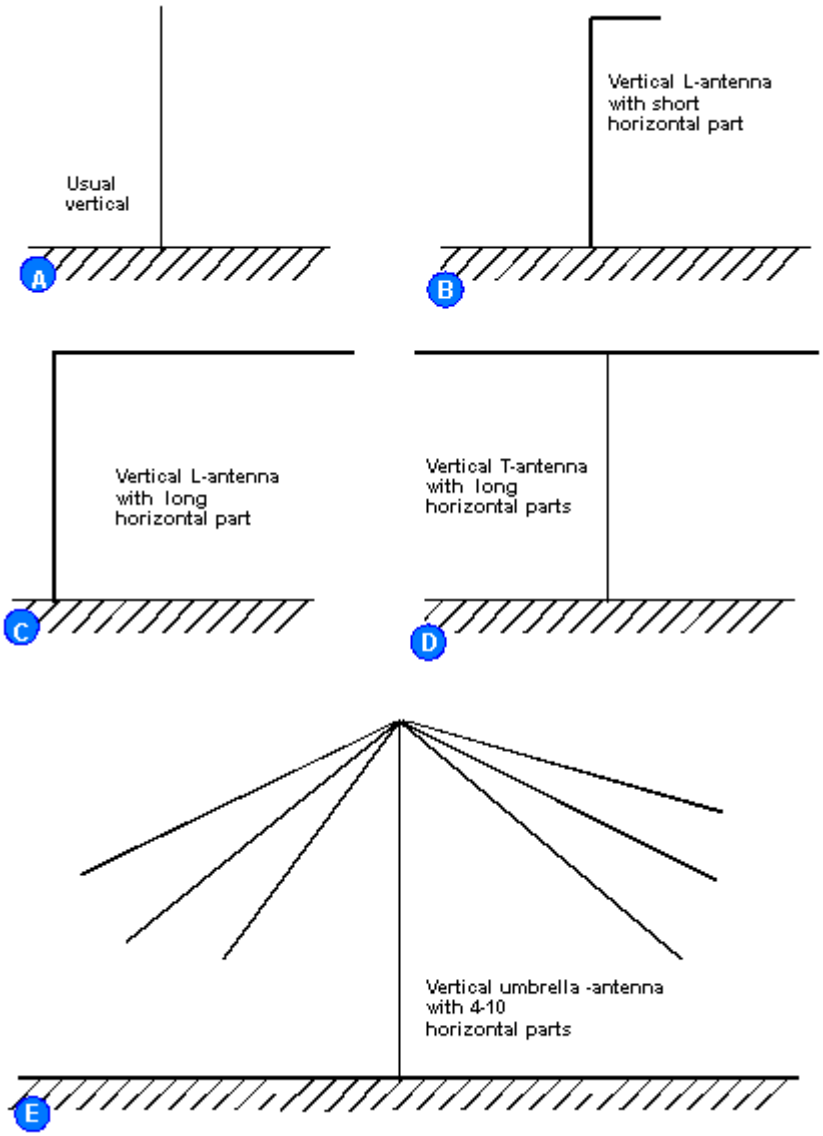

Figure 1

Kind of an antenna	K
Simple vertical **Figure 1a**	4
Inverted L with short horizontal part **Figure 1b**	4.5-5
Inverted L with long horizontal part **Figure 1c**	5-6
T- antenna with long horizontal part **Figure 1d**	6-8
Umbrella antenna with 4-8 wires **Figure 1e**	6-10