

Experimental Helical Antenna for the 40- meter Band

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My first helical antenna was made from a slinky coil (See: http://www.antentop.org/023/UN7FGO%20_023.htm) . Now I decided make antenna from a good copper wire. The antenna was my experiment in shortened helical antennas that may be only one antenna in strictly environment. I choose the 40 meter band as universal band for day and night propagation.

(You may found information on Helical HF antennas at: http://www.antentop.org/library/shelf_helical.htm)

For antenna form I used two plastic tubes in 32- mm (1.25 inch) diameter and in 1 meter length. Holes were drilled in the distance of 10 and 5 cm from the tube ends. Screws in diameter 4- mm were inserted in the holes. Antenna wire was attached to the screw. It was wound 20 meter of 1- mm (18-AWG) wire on the each tube. Between themselves the tubes were fixed by other plastic tube in diameter of 20- mm and in length of 20 cm. The small tube was easy inserted inside of the 32- mm tubes and may hold them firmly. Box near the antenna contains balun. **Figure 1** shows the antenna design.

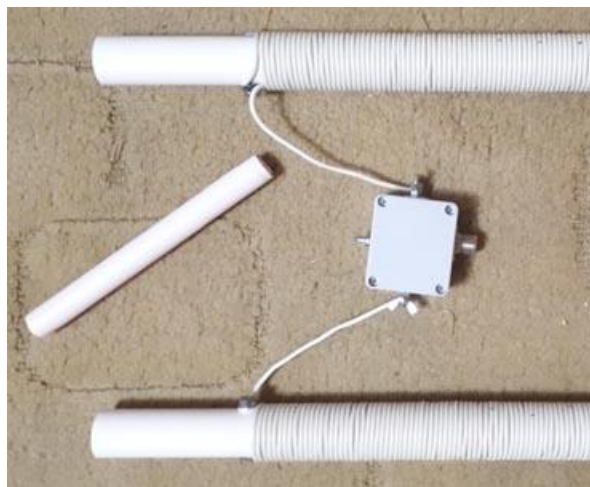


Figure 1 Helical Antenna Design

Ends of the antenna were hanged up to the rope on the balcony. **Figure 2** shows end of the antenna. **Figure 3** shows antenna installed on the balcony. Balcony was at the four floor of the building and the main direction for antenna radiation was closed by nearest 5 store building.

Antenna parameters were taken with antenna analyzer. **Figure 4** shows antenna impedance/SWR at the 40 meter band. Antenna bandwidth is 100- kHz at the 40- meter band. Resonance may be shifted with changing of the length of the antenna wire. Antenna has additional resonance at 27 MHz band.

Figure 5 shows antenna impedance/SWR at the 27- MHz band. **Figure 6** shows antenna impedance/SWR from 2 to 32- MHz.

Antenna was tested in the Air. Antenna worked fine on the receiving. However the antenna worked moderate on the transmission. Anyway at 40- W power going to the antenna I made QSOs up to 1000- km.

73! UN7FGO



Figure 2 End of the Antenna

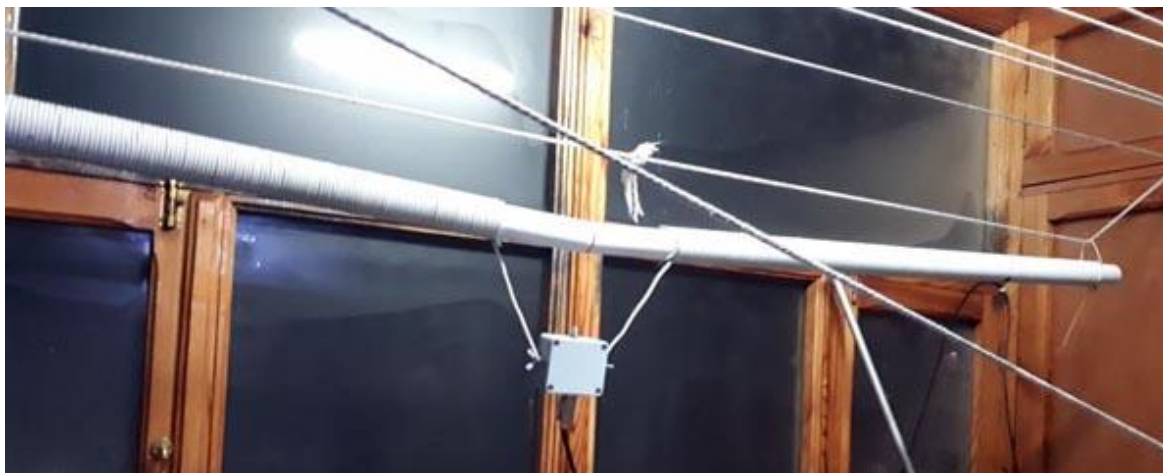


Figure 3 Antenna Installed on the Balcony

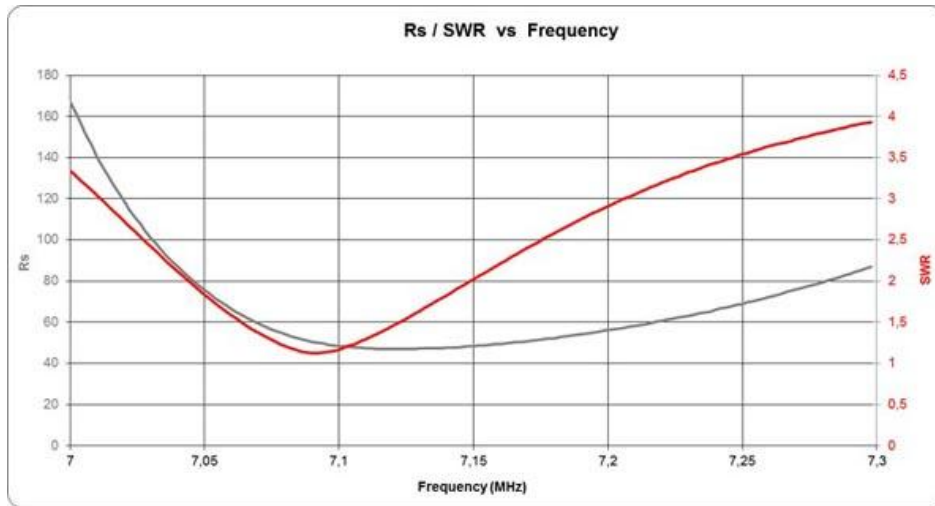


Figure 4 Antenna Impedance/SWR at the 40 meter Band

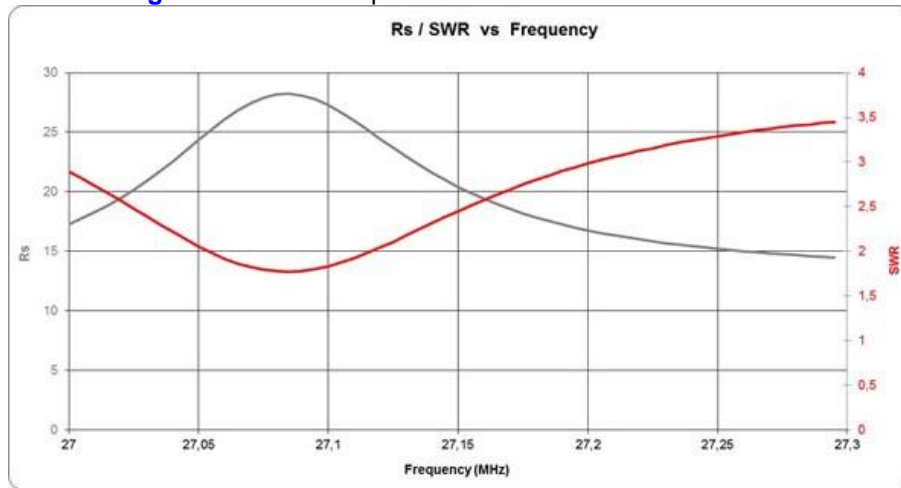


Figure 5 Antenna Impedance/SWR at the 27- MHz Band

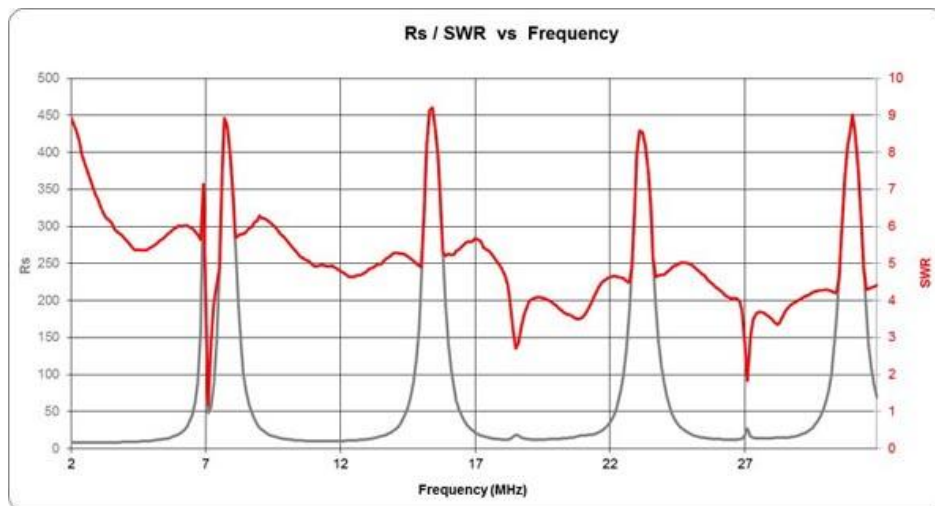


Figure 6 Antenna Impedance/SWR from 2 to 32- MHz